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THE DESERT'S EDGE

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After 2,000 years, reviving Rome, attempting to regain an ancient province, throws herself almost in vain against one of the oldest societies on earth—the Bedouin. Rome once ruled the world—all of it that was worth taking, but she never took the Bedouin. He fled into his desert pastures and left the farm lands to the conqueror. Then Rome fell, and the Bedouin who had helped bring it about came back into his own, turning the Roman farms to pastures. And now Rome and her children, the other Romance countries, are taking another turn and are again driving the Bedouin back from the Mediterranean shores. But he is still a Bedouin, and when they drive him he will continue to be a Bedouin as he was in the days of Charlemagne, of Cæsar, and of Nebuchadnezzar, and as he probably was in the bronze age, the stone age, the ice age, and in ages that preceded these.

For millions of years there has been a Desert's Edge with the environment that makes the Bedouin. How long the Bedouin has been there we have no means of knowing. Unfortunately for us with our taste for history, he did not, with his roving existence, leave kitchen middens, buried cities, or caves with painted walls. On the contrary, it is one of the tricks of his trade to move in the night and leave no trail that his enemy may follow the next day or the next week. Ambuscade awaits the pursuer in this hostile land of strange trails; if he tries to penetrate he finds only defiled waters, burnt pastures, and a land totally desolated.

We of the West are children in a mushroom world in comparison with the Bedouin in his world. Our things of twenty or ten or even

five years of age are old and out of date. Our customs and our institutions come and go. Our cities wax and wane, our principalities, kingdoms, and empires rise and fall, our civilizations perish, giving way to dark ages and renascences, while the unchanged and unchanging Bedouin packs his goods, his wives, and his children upon the same old donkeys and camels, and follows the pasture in the selfsame way. The descriptions of him all tally. You can take them out of one book and put them into another and they fit. It makes no difference whether the description comes from Roman time or Charlemagne's time or Darwin's time. It is the same Bedouin living an unvarying life.

Why does this man of the Desert's Edge have such unending continuity while we of Europe and America have such unending change? The answer is simple. He of the desert is adjusted to his environment; we are not. Having become adjusted to his environment, he has small reason for changes, and we, being still unadjusted and, because of inventions, increasingly unadjusted to ours, have need, ever increasing need for change. We live in a growing world. His has been finished for ages. That may account for his having what looks like such a dull time of it. But that is judging, and judging is difficult. Perhaps his life is not dull to him, but certainly it is difficult.

The Bedouin has been able to adjust himself to his environment because of its simplicity. He lives in a land of little rain. Wide and unending stretches of open treeless land with occasional low bushes, mostly thorns, a little uncertain pasture, sometimes a still more uncertain barley patch, a few springs or wells, most of which go dry in the blazing heat of a rainless summer—that is the Bedouin's world. As an example of adjustment, I think the students of evolution have given him too little attention.

In localities where there is enough rain for regular crops, the farmer tends to possess the land; the Bedouins, however, owing to superior fighting qualities, have at times come to possess some farming land, putting it to their own use, namely pasture. Pasture is a kind of residuary legatee among the uses of land. Most land that is no good for anything else will grow, unaided by man, some kind of plant which some kind of animal can eat. There is the place for the herdsman. On the fatter lands he has sheep, but on the Desert's Edge the coarser-feeding animals find themselves more at home. We of the fat West laugh at the goat because of his great and varied feeding abilities, but these gifts are no joke mid the harsh and scanty

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FIG. 1—Bedouins harvesting barley with their bare hands.

FIG. 2.

FIG. 3.

FIG. 2—The camel's long neck, permitting him to reach to the center of the Christ's-thorn bush, is one of his many adjustments to environment.

FIG. 3—Bedouin tending sheep flocks on a hill in the Desert's Edge.

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herbage of the land of little rain. It is for this reason that, in dry countries, the goats outnumber the sheep, and the donkeys outnumber, far outnumber the horses. Here the camel, the classic master of the arid environment, finally reigns supreme and alone on the often trackless trails of the real desert, because of his feeding habits.

In the course of adjusting himself to his environment, the sheep of the Desert's Edge has possibly beaten the camel at his own game of making his body a storehouse. He has grown a hump that is proportionally larger than that of the camel, but it happens to be placed on his tail, thereby entirely abolishing the joyful habit of frisking that otherwise useless member. But as to a choice between frisking of tails and living through a famine, all would recommend the latter. There are many breeds and shapes of fat-tailed and fat-rumped sheep on the Old World Desert Edge, that arid band stretching unbroken from Morocco to Manchuria.

From the Pillars of Hercules to Palestine the most of the rain falls in winter, as it does in our own California. The late spring, summer, and early autumn are practically rainless. In Spain, Italy, and the more favored sections of northern Morocco, Algeria, and Tunis, there is enough rain for a crop of winter wheat or barley. To the southward where the rainfall decreases and the heat increases, there is a wide transition zone—the Desert's Edge, skirting the wide Sahara from the Atlantic to the head of the Red Sea, and on to southern Palestine and Arabia. Here the scanty and uncertain rains of winter guarantee only a few thorn and other bushes, with perhaps, in the more favored spots, scattering patches of grass. This is the home of the tenting Arab or Bedouin. Flocks only can he depend upon, and these he must take wherever he can find pasturage and drinking water. Thus is the Bedouin a rover, not because of qualities that are inherent within him, but because, like the rest of us, he loves life, and to keep it he must rove with the flocks that feed him. His environment has made him a rover as surely as ours has made us wearers of shoes. The land with its herbage belongs to him who can hold it. Occasionally, in the more favored localities, they will sow in late autumn a patch of barley, the most drought-resistant of grains. Donkeys or camels draw the age-old crooked wooden plow, and break the ground. After the seeding, the owner or some of his people must camp near by until the harvest time, the following March or April. They must wait there and watch the crop every moment to drive away the hungry animals that are sure to come seeking to devour it. If perchance

there is a harvest, it is often gathered in the bare hands, tied into bunches of about two handfuls, and carried in a rope net on camel back to the threshing floor. There it is threshed under the feet of camels or by the beating of sticks. I have seen women glean the field after the harvesters. The armful thus secured was placed on the bare ground and beaten with sticks in order that grain might be had for a barley loaf for supper. No one overeats on the Bedouin barley loaf, and if one has an enemy he has but to strike him with this chunk of nourishment, and he is certainly in a swoon. Barley lacks gluten to confine bubbles of air and become light as does dough from wheat flour, so the desert loaf of coarse-ground barley and water, baked by exposure to the slow heat of glowing embers, is a real wonder of solidity.

The farmer of our land of commerce, rain, and machines grows grain to feed to his animals and to sell so that he may buy things from a distance and pay much freight. Even when it is food for himself, he takes it to the mill and pays toll. The Bedouin has none of this nonsense. He grows grain to eat. Camels, donkeys, and goats may eat the straw, but the grain is not for them. Does he pay toll to the miller? He never heard of a miller. In his tent there is a mill, and the woman does the grinding. The mill is very much like the quern or hand mill that disappeared from European houses a few centuries ago, but which still survives in a few nooks on some of the outer Scottish islands. The nether stone has a hole in the center with a stick fitting tightly. The upper stone has a hole that fits loosely over the stick and permits the stone to revolve and crush the grain which is put, a handful at a time, into the hole. The flour (it had better be called cracked barley) works out between the stones, and it would leave no arguments for the American vendor of grits, shreds, whole wheats, or complete foods.

While the Bedouin has very narrow opportunity to produce, he has very wide opportunity to trade. In the course of his wanderings he may pass an oasis and exchange wool, hides, or surplus animals for dates or grain. Or, again, he may add homespun to the list and, from some caravan or even in the great markets themselves, get metals and other products of foreign lands.

How can this homeless wanderer lay up treasure for a time of need? With all his roving habits he does not let his beasts with their reservoirs of fat have a monopoly of storage. Lean and muscular, the Bedouin is far, far from storing food effects under his own dark skin. For his food storage, he copies not the camel but the squirrel.

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FIG. 4.

FIG. 5.

FIG. 4—Woman using the hand mill at the door of the tent. Husband clad in burnoose; palm fiber basket in foreground.

FIG. 5—The wall of Sfax, and wood vendors waiting for customers.

Sometimes the barley patch has the great good luck to yield more than the camels can carry in the great grain sacks with which they are burdened. There is no lock or building that one Bedouin can build that another cannot, in the owner's absence, break. In this failure of locks, recourse is had to skilful hiding. A deep bottle-shaped hole is dug in the earth. Fire is then built in it to bake the earthen wall. It is next lined with six inches of straw. Then comes the precious grain, bone dry from the blistering threshing floor. With this protection from moisture, wheat or barley will keep for years in North Africa, and the Bedouin can be depended upon to cover up his traces and to find the spot again after many months of wandering in far pastures. Many tribes regularly spend their summers in the Atlas and other mountains, and their winters (the rain period) in the northern Sahara, or on the fringes of the Arabian Desert.

The true Bedouin knows not the ownership of land except as a pasture right or the right to grow a crop of barley. It is much as we temporarily own a certain part of the street or road while passing. Property must, to the nomad, be portable. Aside from the animals themselves, few and precious are the things that can be moved, and wealth naturally centers around wool, skins, and their manufactures. There are many tannin-producing plants, and the beautiful leathers are a part of nomad riches. Similarly, the products of the hand loom, oriental rugs and shawls, are a perfect fit in that environment. The raw materials abound. Housekeeping under that simple screen of camel's hair is reduced to its absolutely lowest terms. The door-yard fence of thorn bushes that is erected to keep the goats and donkeys out serves equally well to keep the bright-eyed children in, so there is plenty of time to spin and weave, and it is needless to say it is done by hand. Lack of clothing is not one of the Bedouin's troubles. It is the stomach that is his awful and constant charge.

In clothing he has one of the most perfect fits to need that can be found anywhere. I regret, on grounds of comfort, that the burnoose, or long, flowing, hooded robe, is not in style here. I should like to wear one a part of the time. When first I saw that man in a hot land wearing a woolen hood over his head, I wondered that he could be such a fool. Gaining knowledge, I apologized. After the heat reaches a certain point, the only relief to be had is in keeping it out. It does not have to be a hot day in the desert for you to discover that upon lifting your hat your head becomes hotter, even though an automobile is giving you a 20-mile breeze. The

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Arab is right when he says that the more wool he has on his head on a hot day the cooler he is.

The dry land is one of great and quick changes in temperature. In the blazing mid-day, the Arab wraps up his head to keep it cool. At sunset he drops his hood back because it is too warm in the more moderate temperature that prevails. The quick radiation from the dry soil causes a surprisingly cool night, and up comes the hood again, this time to keep his head warm, and the long, very wide, flowing robe, capable of many thicknesses, is acceptable wrapping to body and limbs.

Ropes, tents, and harness of camel and goat hair and leather, and wool and leather for clothes, show how nearly the flocks complete the Bedouin's tackle. Immediately under his feet, almost anywhere in the Desert's Edge is one more important raw material, the fiber from the tough leaf of a trunkless palm. It is woven into many useful forms, especially baskets, panniers to load things on the animals, and sun-hats, very broad to keep off the glare.

Mobility is from many standpoints the prize quality of the man of the Desert's Edge. The constant search for pasture keeps him ever going, and makes of him the most expert mover on the surface of the earth. Today here and tomorrow yonder, his life is one continuous practice in the greatest of the military arts—mobilization. Napoleon Bonaparte won the epoch-making campaign of Lombardy because he performed the unthinkable act of taking an army over the roadless Alps. A decade later the Prussians had him bottled up in Jena, a town lying in a pocket of the hills. After six weeks of monotony, the Germans on the plateau relaxed a bit one cloudy night and had a beer and song *fest*. Even the sentinels joined, for why should they watch the sleepy French when there was good beer to be had? When morning light fell on the scene, Napoleon with his cannon was at the edge of the German camp. He had brought his army up a gulch in the face of a limestone cliff, and the smashing humiliation of the battle of Jena followed—another triumph in mobilization. A similar explanation lies back of many military triumphs from the beginning of history to the German campaigns of 1914-15. That army has great advantages which most nearly resembles the Bedouin in mobility.

But this Bedouin's mobility is merely a part of his common daily business, a result of the search for food and raiment, especially food. He is therefore ever ready for a campaign, ever ready to run away, master alike of attack and of retreat. He must surely be the inventor of that apt adage that "he who fights and runs away may

live to fight another day." And when it comes to fighting him—I can think of nothing that quite so aptly covers the situation as the attempt to catch a flea by hand. You go to attack the Bedouin, but he is gone. You sleep from weariness and he falls upon you in the night. Again he is gone where you cannot follow. The population of all Tripoli is put at 600,000, about equal to that of the city of Rome. After a campaign of many months with a modern European army, Italy is reported to have spent $100,000,000 and sacrificed many lives in getting possession of but a fringe of the territory. With far less effort and a very small fraction of the cost, the same force could have taken complete possession of the Nile Delta, the greatest oasis and the greatest mass of population in all the Desert's Edge. The six million people there are farmers. They have given hostages to earth. They have settled homes, no places to which they can run, and they can do nothing against modern artillery. The Tripolitan Bedouins can outrun the artillery, which thus becomes about as valuable in offence as a witch-doctor. It is easy to understand why the nomad has always been swarming out of his habitat and conquering adjacent lands. The Chinese tried to protect themselves by building the Great Wall, which they patrolled for 1,500 miles as sentinels patrol the ramparts of a besieged city. At several places the Romans tried the same device, but the nomads got the Roman lands, and they also conquered China.

Nature seems to have conspired to make the Bedouin a marauder and a warrior. First, he has nothing at stake in any fixed place where he or it can be found and held responsible. Second, he is in the constant practice of mobilization. Third, poverty and famine furnish him an almost constant incentive to thieving. Fourth, the agricultural settlement wherever it may be found is, with its harvests and its material for the slave market, rich prize and an easy mark. Considering the Bedouin, it is no wonder that Babylon and Nineveh have fallen, that Mesopotamia is a waste, and that empires have built walls to protect their lands. As a tribute to his prowess, the Tunisian seaport town of Sfax has today a perfect wall, high enough to be protection from the desert cavalry armed with rifles. This wall was built and kept in repair by the sedentary Arabs as protection against their nomad neighbors of the interior. It was necessary to their protection until 1881, when the French achieved dominance in the affairs of Tunisia. The French maintain an absolute military despotism over the tribesmen, whose compulsory peacefulness is made easier by two things: railroad lines, and a good system of highways to strategic points. In a country much cut up, the rail-

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FIG. 6.

FIG. 7.

FIG. 6—Another view of the walls of Sfax,—a tribute to the military efficiency of the Bedouin.

FIG. 7—The signal rock of the Matmatas and the new French garrison which has replaced it (seen on the left).

road and automobile have given an alien military force such great advantages that in the better parts of Tunisia the marauder has ceased from troubling. He still holds sway in the more forbidding south where French authority has not found means to assert itself.

In this southern region of Tunisia, which has many geographical resemblances to Arizona and New Mexico, there is a development of attack and defence quite similar to that found in the American deserts. In America the prowling Apache has compelled those who would settle to resort to cliff dwellings and villages on tops of almost inaccessible mesas. Similarly, some of the Berber tribes, so far as we know the original natives of the North African mountains, have been able to hold their own against the Bedouin. The Berbers have had the advantage of mountains for aid in defence, and one such Berber tribe, the Matmatas[1], shows an adjustment to the Desert's Edge environment which matches the Bedouin himself. The Matmatas are remarkable in that they have developed an agriculture to supplement their meager pasturage, and have built a town and held their own for ages against the Bedouins' wonderful powers of attack. These two, the Berber hillsman and the Bedouin plainsman, have had an age-long and deadly feud, striving fiercely for life as represented by the same barley sack and the same billy-goat. The English mother of the Dark Ages scared her child to goodness with tales of the Northmen. Similarly, the English churchman for centuries prayed, "From the fury of the Northmen, good Lord deliver us." So, through unknown generations, the Matmatas in their hills have feared the Bedouin from the plain below. How have they made a living in that climate, and how have they escaped going to the slave market, bound to the beasts of the Bedouins?

On the sharp summit of a steep and naked limestone peak that rises above their settlement one sees a stone fire place. This is the signal rock of the Matmatas. It is said that relays of watchers have for many centuries stood by that stone heap night and day through the blistering siroccos of summer and the biting winds of winter,

[1] The Matmata people live on the Matmata Plateau high above the sea in the southeastern part of Tunis. Sir Harry H. Johnston says in "A Journey through the Tunisian Sahara" (*Geogr. Journ.*, Vol. 11, 1898, pp. 581-608) that they kept the Tunisian boys out of their district, and it was probably never explored prior to the arrival of the French. Their type of troglodyte dwellings is the most elaborate of all the underground habitations in Tunis. They select on a mountain side a piece of level ground, dig a great pit, which they finally shape into a rectangular well, 20 to 30 feet deep, with vertical sides. A little distance off they make a sloping tunnel which leads from the upper surface of the ground to the floor of the well below. The tunnel is high and broad enough for the passage of camels. The central court of the dwelling is reached by this long-descending passage, though it may also communicate directly with the upper surface by a long ladder or stone steps. From the central court, other chambers and stables for the beasts are excavated. Sir Harry says that, in very cold winter weather, he found these underground houses so warm and dry that he thought they were artificially heated.

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FIG. 8—View across the town of Matmata, which has 5,000 people. In the center of the picture are a number of round holes to court-yards, while one entrance doorway is shown in the center foreground.

FIG. 9.

FIG. 10.

FIG. 9—Looking down into a Matmata court-yard. Family lives on the lowest floor, using the upper floors for storage. Note the tiny playhouse at the top.

FIG. 10—Interior of the best room of the head man of Matmata. Note the saddlery, rugs, blankets, and the great earthen grain jars.

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peering into the distance for the first sign of the Bedouin raiders. In the moment of detection, the watchers lit the signal fire to warn their own settlement and to pass the news on to other watchers who stood guard on distant cliffs protecting other towns, ready to send attacking parties to aid or cut off retreat at favorable points on the winding valley paths. The Bedouin's advantages decline in a mountain land, and so the Matmatas have survived. Until a few centuries ago they lived in stone houses huddled on the shoulder of the hill below the signal rock. Some time in the Middle Ages an engineer among them made a great discovery which combined the advantages of comfort, convenience, and defence. The Matmatas forthwith built underground houses on the rolling valley floor. This underground dwelling is cool in summer, warm in winter, and, owing to the low rainfall, it is not unduly damp in a gravelly clay soil. One enters a doorway in the hillside, follows a passage for 50 or 100 feet, passing on the way mules, goats, and chickens. At the end of the passage is a court-yard open to the sky and surrounded by arched entrances to rooms and storage lofts, usually two or three stories of them. There is often a stone stairway leading up from this court to the outside world, a kind of back entrance. If the sun shines, one can always be sure of a sun bath somewhere in this court, and at the same time be sheltered from the wind. This is not unimportant in chill winter weather in a land where enough fuel for cooking can only be got many miles away. As one looks across this town and sees no sign of the habitation of man except many earth mounds, it is difficult to realize that here dwell 5,000 souls, buried like prairie dogs below the earth's surface.

Note the way this style of living presents itself to raiding Bedouins. One thinks of a fleet of submarines attacked by a vengeful dreadnought. The word has come from the signal rock and the invisible town is all prepared. Where are the sheep and goats and donkeys, and above all, where are the precious barley sacks? They are underground. Where are the defenders of these chattels? Also underground, no one knows just where, but they are all underground. How many are they? Attack and find out. Would you advise a hungry Bedouin raider to batter down the door of one of these houses? He would be brained before his eyes had got accustomed to the subterranean darkness. Would you advise him to climb down the stone stairs into the court-yard? He would be ambushed from any of a dozen doorways. Should a hostile party try to pass through the settlement, there is absolutely no telling where the defenders might appear and start a fusillade. Matmata has survived the

Bedouin. This roving enemy has been a constant care, but the drought and the famine have been a greater menace, for these people have tried to be agriculturists on the desert's very edge. The French say it is the extreme attempt to maintain agriculture in a well-nigh impossible land.

Recently a garrison was placed at Matmata. A duty of the commandant is to measure the rainfall. In four successive years the results were as follows: 10 inches, 7.5 inches, 6.7 inches, and 5.8 inches. There is practically no rainfall for five or six months, temperatures of 105°-110° F. come every summer, and at times the burning sirocco blows from the Sahara for a week at a time. How does the Matmata live? We of the West would say that they only existed. In bad years there is much suffering and many children die. Their chief food is barley bread, figs, dates, and olives. Occasionally they may eat a little meat, but mostly the animals are sold alive. These people go out on the plains sometimes as far as 50 or 60 miles to compete with the Bedouin for pasture. A part of the population is nearly always away with the flocks. Thus they get wool for their clothes and animals to sell. They grow barley five to ten miles away at the foot of the mountains on their seaward side. But they do not grow much barley, for they expect only two "good" crops in ten years. Of the remaining eight, three are mediocre, and five are failures. Small wonder then that the most conspicuous furniture in the reception room of the head man of the town was a row of great earthern jars larger than barrels. When they are full of barley, crop failure is not disaster. Otherwise, the death rate mounts.

The most important thing in Matmata agriculture is the tree crops. In the utilization of nature's greatest engine of production, the tree, they have made a real contribution to human knowledge and shown the world how to utilize a type of arid land which is mostly of no avail. On the average there is not enough rainfall on their hills to support any useful tree, nor is there a way of storing the water for irrigation. Theirs is a limestone country with the usual underground drainage and an entire absence of springs and permanent streams. It is a fight to get enough water in the cisterns for drinking purposes, and as to washing?—the Great Book of the Desert, the Koran, says sand will do when water faileth. One must respect the shrewdness of Mohammed.

The trees are kept alive by an ingenious method of water concentration. When the rain falls it often comes in torrents, and much of it runs away. To get a little salvage from this waste, the

Matmatas have built loose stone dams in the gulches of their hills. Behind the stone dam the silt and mud collect. This is the cream of the soil, and it gets soaked with water every time a downpour makes the gully run. In these pockets of wetted earth, centuries ago, were planted fig trees, olive trees, and date palms—all food trees and all great economizers of water. These trees in the mountain gulches are the anchoring factor of the Matmatas. From them there are figs and dates to eat, and even olive oil to sell. This tree crop agriculture surpasses the barley growing as a steady dependence, for a good olive crop may be expected every three years, also one mediocre crop and but one crop failure. I saw here some of the finest olive trees I have ever seen and also the largest. One had a circumference of eighteen feet, at four feet from the ground. A French expert had recently estimated it to be a thousand years old.

The watcher no longer stands on the signal rock of Matmata ready to light the beacon-fire. Peace now reigns between these gulch tree farmers of Berber blood and the roving Arab on the plains below. It is the first peace for many, many centuries, perhaps the first in all history. It comes because of the small French garrison on the hill adjacent to the old signal rock, because of the larger garrison in the nearest town, and because of a system of roads. The disciples of the Prince of Peace have not ended this age-long strife. Why? For a dozen centuries the marauding Bedouins who have roamed around the base of the Matmata mountains have yearly gazed upon the ruins of early Christian churches. Why did the early church perish there not to be revived, and why have modern missionary efforts made no dent in the Bedouin's adherence to his past? For the answer, ask the scientist, that man who speaks in the cruel terms of the survival of the fittest.

Survival, self-preservation is nature's first law. For ages the Bedouin has lived in the very face of death. It is a fact that the annual amounts of rainfall fluctuate much, both above and below the average. Further than this, it is well established from the time of Joseph onward that we have series of fat (rainy) and series of lean (dry) years. In a series of rainy years the Bedouin's flocks increase, his children live, and his tribe increases. Then come those dreadful lean years. The famine comes. The Bedouins could not all go down to Egypt and buy grain. What is man to do when his beasts bleat for food, and his children cry for bread as they cling to their mother weeping for sorrow and large-eyed from hunger? He must get food or his wife and children perish. Get food and survive, or miss food for three more days and perish with all his

seed. Since long, long before the dawn of history this terrible thing has faced almost every generation of nomads that has lived in that changeable, treacherous Desert's Edge. Often it has faced each generation many times. Those that got food in the crisis survived. They were the fittest to survive in that environment. Others perished.

In yonder camp is a little food. Get it or die. If you get it, they die. Suppose they all take the full democratic viewpoint and all share the food. All might perish, for there is not enough. The food belonging to the other Bedouin is there. What would you say to your sobbing wife and wailing children as you all starved to death? No! no! this is all talk. Nature does not sit still under such pressure. You raid the other camp. You feed your children on his food. You survive. From the Klondike comes the word, "If a man misses his food for a day he will lie. If he misses it for two days, he will steal. If he misses it for three days, he will kill." The Bedouin that is the most skilful raider is best fitted to survive. There is the explanation of his qualities—a consummate liar, an incorrigible thief, lazy beyond belief, wonderfully hospitable to a guest, yet willing to murder without compunction. Why is he lazy? What good would industry do him? Suppose he had worked hard for sixty days before the raiders came? Stiff and tired from labor, what chance would he have to rise and pursue without stopping for sixty hours in the hope of making a night attack and getting back some of the precious booty? It is not industry that counts for the Bedouin, but a reserve of energy for a fearful run and a courageous fight. Work! steady work! why, that is a matter for the women and the slaves!

It is a surprise that the eugenics party has not made more of this Bedouin, for he is the true example of their doctrine. The feeble in body and the feeble in mind have fallen by the wayside, and the babes of poor digestion perished first in the famine, time without end. Those who have survived are one of the handsomest and best-developed races under the sun. Six feet to six feet two inches and often more, clean-limbed, erect, dignified, they make a group of European and American tourists look like the culls that (from the eugenic standpoint) they are. Scanty fare has made them lean almost to the point of lankness, and they keep the characteristic, even after several generations of town life. Perhaps this accounts for the ridiculous appreciation of fatness by the city dwellers of the Desert's Edge. Among some classes in the cities of Tunisia, the fatter a girl is, the more desirable is she in marriage. There is even

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a regularly prescribed girl-fattening recipe, and the results are sometimes almost beyond belief to one accustomed to seeing the present generation of athletic American girls.

As to the origin and continuance of polygamy, there is strong industrial and social inducement in that there is no possibility of the independent existence of the unattached woman.

Despite the remoteness of Bedouin concepts of right and wrong from the Christian ideal, the Desert's Edge is a birthplace of religions. Friedrich Ratzel has pointed out that the monotonous and unvaried landscape tends to produce in man's mind the concept of uniformity, from which arises the concept of one God and a monotheistic religion. As proof of this it is pointed out that the Desert's Edge has been the starting-place of the three great monotheistic religions of the West—Judaism, Christianity, and Islam.

The Bedouin tends to be imaginative, contemplative, religious. He is not tempted as we are to materialism. Wealth merely means flocks, and as he follows them he has plenty of time to think. Look at the shepherds of the Old Testament. There were many of them. As preparation for his great career of leadership, Moses had a forty-year sojourn in the land of Midian, where he kept the flocks of his father-in-law. After the manner of shepherds, he probably slept with his flock at night, and day after day he was out on the lonely waste with his sheep and his dog, with nature and his God. The telephone and the telegraph did not disturb him, the daily paper did not divert. Books probably did not take up his time. The great absence of the voices of men probably made it more easy to hear the voice of God. It was back of the wilderness that, leading his flocks, he came to Mt. Horeb and received from Jehovah the commission to go and lead his people out of bondage. In crises of their lives, Jesus and John the Baptist retired from the farm lands of Palestine to the Desert's Edge (the wilderness). While this place has seen the origin of religions, including that of Christ, it has been unable to nurture them to a high moral plane. The Jehovah of the nomad Israel was the God of slaughter that the nomad Bedouin needs. Jesus came from the farm lands where there was enough to eat and to spare. "After you, sir," means, in the long run, that there is enough for both. Christianity, like good morals, is a product of the surplus—a fact of much significance to those interested in civilization. The lack of a surplus is the dominating fact of the Desert's Edge.

THE PEOPLES OF NORTHERN AND CENTRAL ASIATIC TURKEY

By LEON DOMINIAN

[Maps facing pp. 852 and 868.]

The peoples and ideas emanating from within the realm which still bears the name of Turkey have left an indelible mark on the rest of the world. Crossed by some of the great highroads of history, the land is stirringly inspiring in every aspect in which it is beheld. Its heritage of memories and the prestige of a happier and grander past are undisturbed by touches of sad decline. The foundations of our progressive spirit were laid in that eastern region. It is the seat of our civilization and the cradle of our religion. From a purely scientific standpoint, its human grouping and surface configuration present highly interesting interdependence. This article will be confined mainly to a study of this relation. Grateful acknowledgment is made to Councilor Madison Grant for new views and important additions suggested during the revision of the proof.[1]

The region is divisible into six major geographical sections. Each forms a background against which distinct types of the human family are displayed. The various groups differ from one another by religion or language, often even by race. A fringe of fresh and verdant coastland which surrounds the elevated shelf of Asia Minor is largely Greek and Christian. The only foothold which Western thought, art or temper ever obtained in Asiatic Turkey is found within this wave-lashed strip of land. The plateau-heart of Anatolia is predominantly Turkish and Mohammedan. The Christian element scattered on its steppelike surface is unable to assert itself and yields to Oriental ascendancy. The high and broad mountain masses which border it on the east are homelands of the Armenoids, generally Christians, sometimes Mohammedans, but almost always characterized by broad-headedness accompanied by a peculiar flattening of the back of the skull. Beyond this mountain barrier Asiatic Turkey becomes entirely Semitic, being mainly Arabian in speech and overwhelmingly Mohammedan in creed. Three main regions characterize this southern area. The long and narrow cor-

[1] The writer is also indebted for valuable suggestions to Professor R. J. H. Gottheil of Columbia University and to Dr. E. Banks, late Director of the Mesopotamian Research Expedition, for many of the photographs reproduced with the text.

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ridor of Syria became the highway which in antiquity bound the flourishing empires of the Nile basin to the powerful kingdoms of the Hittite highlands or of the Mesopotamian lowlands. Its motley population containing representatives of every race is a relic of former to-and-fro human displacements along its troughlike extension. In the adjoining desert Bedouin tribes find their favorite tramping ground. The twin valley of Mesopotamia is the home of peoples in whom fusion of Semitic and Indo-European elements is observable.

The history of this land is that of its invaders. Successive streams of humanity poured into it from four superabundant reservoirs of men. Its central mountain zone was the motherland of a virile race whose sons went forth at intervals to breathe vitality in the bosom of pacific populations scattered between the Ægean coast and the valleys of the Nile or of Mesopotamia. Armenians and a number of Mohammedan sectaries represent today this "Alpine" race. Mediterranean men proceeded constantly from the south and west to new homes in the pleasant valleys that connected eastern Ægean shores with the interior tableland. Mobile Semitic hosts abandoned the plateau of inner Arabia before the time mentioned in our earliest ascertainable records and drifted naturally northwards towards the fertile Tigris-Euphrates basin or the commercial routes of Syria. Finally a Turki element, lured out of its mountain cradle in the Altai by scattered grasslands extending westwards, swarmed in successive hordes into Asia Minor and even beyond, well into the heart of Europe.

In addition to the foregoing fundamental wanderings, the inflow of an Iranian element, composed of men of Aryan speech, passes within our ken. This contingent marched out of the plateau of Iran and attained the Turkish highland without incurring the necessity of scaling its slopes. As a result of this migration Aryan language permeates Armenian[2] extensively. The Turks also have appropriated a certain amount of Persian words and culture from the same source. Racially, however, the eastern element was absorbed by the Armenoid population.

The present inhabitants of the diversified domains of the Sultans have been welded by the run of history into a shadowy political unity which has failed to conciliate their incompatibilities of origin and ideals. Turkey is a thoroughly theocratic state. Its sovereign-

[2] Fully one-third of Armenian consists of words of Persian stock. Some Armenian philologists point to the existence of a small remnant of highly ancient words which cannot be traced to Aryan forms and which probably represent the survival of a language indigenous to the Armenian highlands.

caliph and his subjects have always considered it their most important mission to bring Islam to the infidel. So great is the hold of ideals over the human mind, however, that the non-Mohammedan populations have clung passionately to their religious beliefs. We are thus forced to seek in creeds the main distinguishing traits which, outwardly at least, divide the inhabitants of Turkey into groups known by different names. We shall see, however, that in the minds of many of them, language or historical traditions have little significance. At the same time it is believed that distinctions of a more fundamental character will be brought out in the course of this study.

Greeks

Our knowledge of the first appearance of Greeks in Asia Minor has undergone radical revision in recent years. Their prehistoric culture can be traced as far back as the Neolithic. The chief interest of modern discovery centers around the now accepted fact that Greek culture originally invaded the region from the south and that the Indo-European element which brought Aryan speech to the land is a later wave which flooded the original Mediterranean stock at some time during the transition from the Age of Bronze to that of Iron.[3] The southwestern coast was first colonized. A northerly spread occurred thence and proceeded mainly along the coast.[4]

The sequence of geological events preceding man's appearance upon the Ægean coast of Asia had imparted features which were destined to favor human development to an exceptional degree. A land-bridge connecting the Balkan and Anatolian peninsulas occupied the site of the Ægean Sea at the dawn of Quaternary times. The subsidence of the land during this period was accompanied by heavy fracturing trending in east-west lines. The Ægean archipelago, studded with islands and surrounded by deeply indented coasts, conveys a vivid picture on the map of the crustal shattering which occurred.

Climate also conferred its share of advantages. The long and narrow valleys are sheltered by mountains on all sides except to seaward. Northerly air currents cannot reach them. Frosts or snows are hence unusual.[5] The course of moisture-laden winds blowing landward from the seas that wash the three coasts of Asia Minor is arrested by the mountainous rim of the peninsula. Pre-

[3] H. R. Hall: The Ancient History of the Near East, Methuen, London, 1913, pp. 31-79.

[4] R. Dussaud: Les civilisations préhélléniques dans le bassin de la Mer Egée, Genthner, Paris, 1914, pp. 414-455.

[5] D. G. Hogarth: The Nearer East, Appleton, New York, 1902, p. 102.

cipitation is almost entirely expended upon the narrow shore lands. Copious rainfall and flowing rivers thus provide this historic Anatolian fringe with patches of luxuriant vegetation and green valleys. The interior tableland on the other hand remains parched and barren during the summer months.

A splendid stage for Greek history was thus built during the prehuman period. Early Mediterranean oncomers discovered sheltered havens and fertile inlets along the entire development of the fancifully dissected coast. A natural festoon of outlying islands increased their security by providing them with advanced posts for the detection of hostile raids. Erosion along the parallel lines of east-west rifts had carved fair valleys in which the winding rivers of classical literature found a channel. But above all, the sea contributed commerce and cosmopolitanism, both great elements of world power. These in turn favored the growth of tolerance,—a trait which has ever marked the Western mind and which at that particular spot was to constitute a bastion destined to remain impregnable to the opposing spirit of the East.[6]

Intermediate site, low relief above sea level and genial climate combined to give the Greeks a full portion of the delights of daily life. These are the physical elements upon which the striking cultural superiority of Hellenism is founded and without the concourse of which it has never set permanent foot anywhere. The brilliant florescence of Greek civilization in pagan time attained its apogee wherever these three geographical factors prevailed. The Byzantine Empire succumbed before Eastern onslaught because it was gradually converted into an Asiatic state and thus exceeded the boundaries marked by nature for Greek humanity.

The sixth century of the pagan era was the Golden Age of Hellenism in Asia Minor. The elongated seaward valleys became the seat of flourishing and independent nations. A strong democratic spirit prevailed among their inhabitants. City states or self-governing communities were numerous. Their merchant princes drew on the vast eastern rearland for supplies which they sold to Europe. They also collected heavy tolls for the freight directed eastwards from the west. A double stream of wealth thus flowed into their treasuries. The prosperity of this period has never been paralleled since in the region.

Creative art found a home upon a site so eminently favored by nature. The heart and mind of its inhabitants throbbed respon-

[6] D. G. Hogarth: Ionia and the Near East, Clarendon Press, Oxford, 1909; J. L. Myres: Greek Lands and the Greek People, Clarendon Press, Oxford, 1910.

sively to the stirring events which affected their lives as a result of their country's situation at the junction of the most important sea and land highways of the world then known. There the antagonism between East and West, out of which so much world history has been made, broke into violent clashes after the periods of commercial interchange. Talent was spurred to high achievement under the beneficial stimulus of foreign contact, wealthy patronage and genial environment. A long chain of imposing ruins and prolific discoveries of matchless masterpieces of the craftsman's or artist's loving toil convey ample testimony of nature's concentrated prodigality on this famous coastland.

The present Greek occupants of the Anatolian shores reflect their pleasant environment in the lightness of heart which is one of their distinguishing characteristics. Their craving for gaiety, society and enjoyment is unfailing. Even the gloom of Asiatic dominion does not prevent merrymaking at every conceivable opportunity. In these respects the Greeks share to an eminent degree the feelings and gallantry of the nations of the Western world.

With the exception perhaps of the Circassians, the Greeks are the handsomest of the inhabitants of Asiatic Turkey. Classical forms of the head and of the general cast of countenance are met in every nook of the Anatolian seaboard. Their profiles recall the gently curving lines of ancient Greek statues or medals. Among women graceful carriage of the head and neck adds to their charm. The gait of the men is firm and erect.

Fishing and sailoring are the hereditary occupations of the coastal Greek populations of Asia Minor. Inland they become traders. The "corner" grocery or the village butcher shop is generally owned by a Greek. In recent years the Greek has learned to play the part of the promoter in the growing development of Asia Minor. He is often the middleman who brings Western capital to Eastern opportunity. In this his rôle differs but slightly from that of his Lydian or Carian ancestors.

The true Greek is met only as far inland as a whiff of the salt sea air can be inhaled. Eastward, on the Anatolian tableland, Greek communities of the ancient Phrygian and Cappadocian lands differ from kindred coastal populations as widely as the fascinating greenswards of the one vary from the semi-arid steppe of the other. Once beyond the range of maritime influences, Greeks often forget their own language and adopt Turkish instead. This is frequently the case in many of the inland settlements where Turkish is now the

only medium of oral expression for Christian thought.[7] Racially, too, the Greeks of the inland towns and villages betray a probably Alpine or Armenoid origin rather than Mediterranean descent. Short stature, ample chest development and broad-headedness are conspicuous among them. The rock-hewn villages south of Mt. Argaeus afford a clue to the origin and antiquity of these mountain Greeks.[8] They are descendants of the natives which were conquered by the armies of Greek pagan states or by Byzantine troops. The conquerors brought language and culture to the upland populations but were numerically insufficient to impose a new racial stratum. Later the wave of Turkish invasion drove out Greek language and forced Asiatic speech on the same mountain populations without always replacing Christianity by Mohammedanism.

Duality of language is sometimes accompanied by a strange duality of creed among Anatolian Greeks. At Jevizlik, on the road between Trebizond and Gumushchane, dwell crypto-Christian Greeks who publicly profess Mohammedanism while maintaining secret workship of Greek orthodoxy.[9] The inauguration of a constitutional form of government in 1908, with its promise of religious liberty, gave the members of the community an opportunity to denounce their outward form of faith and proclaim exclusive adherence to the religion they had never forsaken.

To the philologist these ancient Greek communities are veritable treasure grounds, especially when found in mountainous districts. Archaic forms of speech are in current use among their inhabitants. In many, the purity of the ancient Greek dialects of Asia Minor has been preserved with slight contamination of later literary influences. The names of those who speak these vernaculars supply interesting connection with the classical period of Hellenism. Socrates or Pericles will cook daily for the traveler, and Themistocles supply him with tobacco. More than that, they all make themselves intelligible in the style—and the spirit, too—of inscriptional language.

Many of these communities owe their survival to the proficiency of their members in a particular industry. The settlements of Greek miners scattered in the Pontic and Tauric mining districts are instances in point. The Turkish conquest of the Byzantine empire was accomplished by Asiatic barbarians who knew how to fight but

[7] In many of these Anatolian communities Greek is written with Turkish characters.

[8] G. de Jerphanion: La région d'Urgub (Cappadoce), *La Géogr.*, Vol. 30, No. 1, July 15, 1914, pp. 1–11.

[9] They are the Mezzo-Mezzos of Levantine designation.

included no artisans in their ranks. They were therefore obliged to rely upon the populations of the conquered lands for the maintenance of industrial and commercial activity. This notorious incompetence of the Turk for any pursuit other than that of soldiering is at bottom the prime cause of the survival of Christian communities within Ottoman boundaries.

Turks

The Turks and their name were first revealed to the Western world in the sixth century of our era. But their invasion of Asia Minor must preferably be conceived as a gradual infiltration begun in prehistoric times. Hittite carvings represent, among others, a recognizable Mongoloid type of Tatar soldiers who fought as allies of the great mountain state.[10] Pig-tails, high cheek-bones and oblique eyes have been conspicuously modeled by the sculptor. Tatar migrations are thus discerned in the morning of the history of Asia Minor. The early invaders were steadily reinforced from the east by their kinsmen. The rise of the Seljuk Turks to dominance was the explosion of energy accumulated in the course of the centuries in which this movement of Altaic tribes had persisted. The consolidation of Ottoman power marked its culmination. A single tribe could never have acquired sufficient strength to establish a mighty empire had not its ranks been swollen by members of kindred groups encountered during its migrations. This is what actually happened when Jenghiz Khan and Timur appeared on the stage of history. Turkish accounts describe both as fiery leaders, men who could command the adherence of the vast swarm of descendants of their kinsmen, in whose footsteps they marched. Sultan Osman, the founder of the present Turkish dynasty and reputed of the same caliber, likewise drew on a human legacy of centuries, for the accomplishment of his designs.

Unfortunately, the Turks bear a name which is utterly void of significance. They themselves apply it to every Mohammedan inhabitant of Asia Minor without discrimination of race or origin. But for fully eight centuries they have stocked their harems with women seized from conquered populations. It is no exaggeration to say that this human tax has been levied on almost every family of the Caucasus, Western Asia and the countries of the Balkan Peninsula. Today the net result of this variegated intermixture is that the Tatar origin of the average Turk, so called, is entirely concealed

[10] J. Garstang: The Land of the Hittites, Constable & Co., London, 1910, p. 318.

FIG. 1—A group of Turks who have none of the racial traits indicated by their name. The seated members in the foreground are typical inhabitants of the Anatolian plateau. The Greek type, closely resembling the Italian, appears in the background.

by the mingling with Mediterranean, Armenoid-Alpine and even Nordic elements. Except in a few isolated instances, the Turki type of Central Asia is rarely met within Turkish boundaries. Clearly no valid claim to racial distinctiveness can be set up by the Turks.

In religion the Turk is no innovator. He has merely taken unto himself the idealism of Arabia. And yet his efficient wield of the fine edge of Mohammedan fanaticism failed to sever the ties which bind Islam to this land. Even his language is not his own. The splendor of Arabian syntax and the supple elegance of Persian style alone confer literary flavor upon it. Over 70 per cent. of the words in any Turkish daily are Arabic retained in unalloyed purity. A scant sprinkling of Tatar words merely recalls by their sound the raucous articulations which form the nomad's speech, while their paucity is a true measure of the limited range of concepts which find lodgment in his mind.

Turkish nationality is equally meaningless. The descendants of Asiatic nomads became masters of Western Asia without ever conferring the boon of government or of nationality upon the land and its peoples. In Gibbon's mordant language "the camp and not the soil is the country of the genuine Tatar." And Turkey is still a vast field in which the Turk has pitched his tent, waiting, knowing, that the day is not far off when he will have to break camp and seek new pasturages for his herds and flocks. But the site on which he has settled for the past five centuries had been the seat of a highly organized government. Seeing himself master of this estate the Turk unhesitatingly adopted its institutions. Thus, under the mantle of Islamic theocracy, Byzantine government and customs have continued to flourish in Ottoman dominions. Barring special features belonging to Mohammedanism, the ceremonials of the Sultan's court may be traced step by step to Byzantine forms. The very absolutism of the caliphs is alien to the fundamentally democratic character of both Tatar societies and Koranic teaching. It is Byzantine and a relic of the despotism of the Roman cæsars.

In speaking of the Turks it is necessary to carry two distinct types in mind. The pure Tatar vagrant, true to his native indolence, which fits him ill for sedentary occupation, is in the minority. The mass of the Turkish population consists of a mixed element in which the racial strain of given localities persists along with characteristics imparted by fusion with Turki conquerors. This mingling is indicated further by the spirit which moves this people in the performance of its daily acts. Its members are recruited

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among the plodding, gentle-mannered and kind-hearted peasants of the land. Local influence accounts for these qualities. Occasionally, however, the foreign streak will crop out. Then, like their nomad ancestors, who, from peaceful shepherds roaming leisurely from patch to patch of green, are transformed into fiends incarnate by the approach of a thief or a beast of prey, or whom a passing storm will throw into fits of uncontrollable rage which vents itself in passionate outbursts of shrieking and gesticulation, the Turkish peasants can cast their natural softness of character to the winds at a moment's notice and become either bloodthirsty murderers smiting at unarmed Christians or else heroes performing gallant deeds on the battlefield.

The majority of this Turkish population finds a congenial home on the Anatolian upland. Their ancestors beheld here an environment in which the physical characteristics of the plateaus of Central Asia were reproduced. They took to it naturally. The tableland presents the appearance of a rolling expanse mournfully devoid of vegetation, save for rare clusters of trees of stunted growth. Scanty plots of grass surrounding sickly pools or streams bear apt likeness to the holes of a ragged garment spread over its surface. Sun-baked in summer, chilled in winter, with a climate too deficient in moisture for the favorable development of human societies, the land could only appeal to Asiatic sons of semi-arid areas. In recent years, the tendency of Turks to retire to this region is observable wherever the industry of Christian populations of the encircling coastland has rendered life too arduous for Turkish love of ease.

The penetration of this tableland by nomads from the heart of Asia goes on today as in the past, albeit with abated intensity. It is no rare occurrence in Asia Minor to meet Tatars or Turkomans who have been on a slow westerly go for periods of from five to ten years at a time. Most of them come from the Kirghiz steppes. Centuries of nomadism are silhouetted against the sky-line at the sight of these wanderers moving gently over the plateau. A vague desire to change their residence from a Christian to a Mohammedan country impels their wanderings, according to their own accounts. Constantinople looms as an objective nebulously impressed in their minds. But the goal is rarely attained. In reality their migration is as unconscious as that of their forefathers and merely carries them out of sheer necessity from pasturage to pasturage in the manner it affected former generations.

Mohammedan Immigrants

Ever since the establishment of Turkish authority in Western Asia, the policy of the Sultan's officials has been directed towards attracting Mohammedan settlers from foreign countries to the unpopulated districts of Turkey. Particularly at the end of unsuccessful wars, special efforts are made to induce Moslem inhabitants of lost provinces to return within Turkish boundaries, where land often exempt from taxation is assigned to them. Widely distributed Circassian, Tatar and Turkoman settlements owe their origin to this Turkish method of increasing the Mohammedan element in the country. The Bithynian Peninsula, where Cretaceous limestones and sandy Eocene beds provide excellent soils, is a region favored by immigrants.

Russia's southwesterly spread of empire is responsible for the movement of some 500,000 Circassians from the Caucasus highlands to Asiatic Turkey. Lithe of figure, brilliant-eyed and nimble in mind, these emigrants are morally and physically far superior to their new countrymen. They bring with them the higher standard of living of their native land. Their dwellings are more solidly built than the customary shanties or hovels of the Anatolian tableland, and their food is of the average European quality. Wherever settled they live in a degree of comfort unknown to the Turkish peasant. Flourishing farming communities have grown around their villages. In cities they are distinguished by a natural aptitude for commerce, and many an able government official has been recruited from their numbers.

In race, language and religion the Circassians of Turkey present, according to tribal origin, the confusion existing in their cradle land. The Kabardian group of the Uzun Yaila are of Western Caucasus extraction and speak an incorporative language. The Chechen settled in Syria are derived from Daghestani highlanders. In some cases Circassians bear Christian names, but worship in mosques. Representatives of Central Asiatic Indo-European and even Semitic races are found among them.

A colony of Noghai Tatar refugees was founded in the lower Jeihun valley after the Crimean War, at which time it consisted of some 60,000 individuals. Their numbers were speedily reduced, however, by the malaria and fevers of the unhealthful Cilician coastland. A decimated remnant is now engaged in farming the marshy lands originally bestowed on their fathers. They maintain excellent relations with the Turks, with whom they intermarry.

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The Turkomans of Asia Minor are, according to their statements, refugees from Moscovite Christianity. In reality they seek escape from Russian pressure exerted to force them to abandon nomadism. This name is applied generally to immigrants coming from Turkestan who have preserved their roving habits. The cruel Turki type of lineament and expression is observable on their faces. They are Sunnis, or orthodox Mohammedans, and a Turkish-speaking people, but have little intercourse with native Turks.

The Karapapaks, or Black Caps, known also by the name of Terekimans, are Shiites, or adherents of the eastern branch of Mohammedanism, from Russian Armenia, who have crossed the Turkish frontier and settled near Patnoz in the Van vilayet. The original seat of this people is located between Chaldir and Daghestan. Racially they are of Turki stock. Tatar types predominate among them, although Circassian and Persian physiognomies are by no means uncommon.

The Lazis of northeasternmost Turkey, who are sometimes known by the name Tchan, form the connecting link between the Caucasian and Anatolian populations. Many of them have forsaken their Russian homes in the past thirty years for the land of their kinsmen on the Turkish side of the frontier. They occupy, in fairly dense communities, villages nestling on the forested seaward slopes of the Pontic Alps as well as the narrow strip of coast east of Platana. Former generations considered them as pirates or brigands. They now follow less irregular pursuits, but still bear the reputation of being daring smugglers. The Turkish navy recruits sailors from among them.

By race the Lazis are allied to the Georgian group of Caucasus peoples, and their intermixture with ancient Armenian populations is probable. They speak a southern dialect of the Grusinian language closely allied to Mingrelian but mingled with Greek and Turkish words. In some localities Turkish replaces their vernacular entirely. Their adherence to Mohammedanism is noted for its laxity.[11]

Mohammedan Dissenters

A number of communities whose origin is wrapped in obscurity are found off well-beaten avenues on the Anatolian tableland. A mild, temperate lot, broad-shouldered and open-faced, they have

[11] Many Moslem immigrants from Eastern Europe are also found in Asia Minor. Bosnians, Albanians, Pomaks and in general representatives of every Mohammedan community in the Balkans prefer sometimes to settle in Asia Minor.

much in common, in spite of diversity of worship and separation. Racially they present few of the Turki features. Their speech is usually Turkish, but they keep rigidly apart from the Turks. They are Mohammedans in name only. Having secured immunity from the fanaticism of the masters of the land they have secretly maintained ancestral beliefs to the full extent of primitive ignorance and seclusion. When the light of ethnographic research shall have been fully shed on their rites, it is likely that the transition of religous thought from the paganism of Hellenic times to the Christianity of the Byzantine era will be revealed.

To this group belong the inhospitable Tahtajis (known also as Chepmi and in their westernmost extension in the Aidin vilayet as Allevis), the woodcutters of the upper recesses of the Lycian mountains. A people slightly altered from primitive manners, they form a community of about 5,000 soŭls. Eastern and Western culture swept by their mountain homes, leaving the faintest of traces among them. Having neither priests nor churches they are held in disrepute by the Turks. Similarity with Eastern religions can nevertheless be traced in their worship. They wail over the corpses of their dead as do the Egyptians. A vague connection with the Iranian ideals is discernible in the belief they hold regarding the incarnation of the devil in the form of a peacock. They cannot be induced to discuss their rites with strangers. Faith is their all, in their simple minds, and well accentuates the separatist tendency determined by their rugged mountains.

A more important group, the Kizilbash, present unmistakable racial characteristics peculiar to the Anatolian mountains over which their settlements are dispersed. The name is pure Turkish for "red head," but cannot be traced to appearance or head-gear in Turkey. In Persia, however, allied communities are known whose members wear scarlet caps.[12] The bend of the Yeshil Irmak[13] and the highlands extending from the Taurus to upper Mesopotamia contain their villages.[14]

A Turkish-speaking people of peaceful habits, engaged exclusively in the tillage of their lands, submissive to authority, frugal and industrious, such are the Kizilbash in the midst of their Turk-

[12] It is not at all unlikely that the Turkish Shias, forcibly transplanted from Persia by the Sultans during the wars with that country, settled among ancient Anatolian communities, to which they brought the name of Kizilbash.

[13] R. Leonhard: Paphlagonia, D. Reimer, Berlin, 1915, pp. 359-373; J. W. Crowfoot: Survivals among the Kappadokian Kizilbash (Bektash), *Journ. Anthrop. Inst.*, Vol. 30, 1900, pp. 305-320.

[14] The distribution of Kizilbash villages in the Yeshil Irmak valley is shown in G. de Jerphanion's Carte du Bassin Moyen du Yéchil Irmak, 1:200,000, Barrère, Paris, 1914.

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FIG. 2—Kizilbash, budding and in their prime. A people who still adhere to exceedingly ancient customs and worship. (Reproduced from Leonhard's *Paphlagonia* by courtesy of Messrs. D. Reimer Berlin.)

ish, Kurdish and Armenian neighbors. They are usually on excellent terms with the Christians. The Turks hold them in contempt on account of religious divergences.

In religious thought, the Kizilbash may be classed as the most liberal among the Mohammedans of Turkey. Their interpretation of the Koran exempts them from keeping fasts and allows them the use of wine. They allow their women to go about with a freedom which has never been tolerated among Sunnis. Christian rites, such as the custom of praying over bread and wine, are performed among them. Fragmentary survivals of pagan observances likewise form part of their worship.

The Kizilbash are closely affiliated with the Bektash confraternity, a once powerful Islamic organization which still owns a large number of convents (*tekkes*) and churches in Turkey. Indiscriminate use of the two names has led to much confusion in the writings of travelers.[15] It seems preferable to restrict the name of Kizilbash to the group of Anatolian people whose mountain origin is amply proven by somatic traits and whose cultural development denotes amalgamation with invaders of the tableland. The term Bektash can then be applied to the form of religion to which this people adheres at present. The connection is probably founded on the ease with which Bektash proselytism drew recruits from among Kizilbash populations. In the light of this distinction the so-called Bektash people of the Lycian mountains are merely a sub-group of the Kizilbash, to whom they are related in part by race, language and religion.

The Balikis, or Belekis, living on the southern fringe of Sasun,[16] are probably also a remnant of the old highland population. The Mohammedanism they profess is tainted with dim reminiscences of Christian worship and was probably adopted as a self-preservatory measure. Religious beliefs weigh lightly, however, on this community. Its members possess neither church nor mosque wherein to congregate. A term of residence among them would probably enable an observer to discover survival of very ancient customs. The passing traveler can do little more than note the unusual freedom with which their women go about unveiled or be attracted by the mixture of Arabic, Kurdish and Armenian words in their language.

The Avshars, descended from Persian immigrants mingled with

[15] The Turks themselves apply the name of Kizilbash in loose fashion. They designate by it among others the Shabbakhs and Bejvans, who live near Mosul and whose religion contains curious mixtures of Christian and Mohammedan beliefs.

[16] H. F. B. Lynch: Armenia, Longmans, Green & Co., London, 1901, Vol. ii, p. 430

native hill populations, are settled mainly on the eastern slopes of the Anti-Taurus facing the northern end of the Binbogha range.[17] The two elements which are blended in this people are also represented in their religion. The newcomers brought Shiite Mohammedanism and ensured the predominance of their views over the relics of the nature cults of the aboriginal groups. By speech, customs or occupation the community differs in no respect from neighboring Turks.

The nomad element of the Anatolian plateau is represented mainly by the Yuruks, whose wanderings range from the northern landward slopes of the Cilician Taurus to the mountainous tract surrounding Mt. Olympus. Roving over barren districts, the members of this group are true half-starved human products bred in areas of defective food supply. The men know no other occupation than that of tending their sheep and horses. The women are noted carpet weavers. Strangers passing within sight of their tent settlements can generally rely on finding the nomad's proverbial hospitality under their felt roofs.

In common with kindred plateau communities, the Yuruks hold severely aloof from the Turks. But they have adopted Turkish speech, and it is gradually replacing their ancient vernacular. They have sometimes been connected with European gypsies, although the little that is known concerning their history and traditions hardly warrants such an assumption. A promising field for ethnographic research still awaits exploitation among their settlements. They call themselves Mohammedans and circumcise, but have no priests or churches.[18]

The Aptals of the lofty valleys of northern Syria also have nomadic habits and appear to be closely related to the gypsies. Although they claim to be Sunnis they rarely intermarry with settled Mohammedans. Their roaming life carries them from village to village, generally in the capacity of musicians and entertainers. According to their traditions they were expelled from the Lower Tigris regions in the ninth century.[19]

Armenians

The tableland on which Armenian life unfolded itself was faulted into blocks and covered by flows of huge volcanoes after the Miocene. Pontic ranges fringe it on the north and thereby forbid access to the

[17] Earl Percy: Highlands of Asiatic Turkey, Arnold, London, 1901, pp. 89-90.

[18] C. Wilson: Handbook for Travellers in Asia Minor, Transcaucasia, Persia, etc., Murray, London, 1911, p. 68.

[19] The gypsies of Syria are known by the name of Nawar, or Zotts.

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Black Sea.[20] On the south the folds of the Anti-Taurus Mountains likewise act as successive barriers. But no mountain obstacles intervene to the east or west of Armenia. Close racial, linguistic and historical relations can hence be traced between Armenians and Persians today. Furthermore, the existence of important Armenian communities scattered all the way west of Armenia to the coasts of the Ægean becomes intelligible. The very crowning of Armenians as Byzantine emperors may ultimately be explained by this east-west extension of relief in Western Asia.

The heart of the Armenian plateau is found in the gently folded limestones and lacustrine deposits surrounding Lake Van. Here an elevated plain relieves the ruggedness of environing peaks. Here, too, our earliest knowledge of Armenian history is centered. But the formation of nationality upon the surrounding sites of intricate relief was a long-drawn process. A highland dissected into numerous valleys, each of which represented human-tight compartments, could not become the seat of a united people. The region, being broken up, favored division. Accordingly, feudalism flourished undisturbed throughout its extent. Each valley or habitable stretch was governed by its own princeling. These petty chiefs relied on the security provided by their rugged environment and were naturally disinclined to acknowledge authority emanating from outside their valley homes.

The plain of Van has always loomed large in the history of Armenia.[21] This interesting depression occupies the southeastern corner of the great central plateau and lies surrounded by volcanoes which were centers of lively eruptive activity during the Pleistocene. Together with the plain of Mush it forms a single basin which was once a lake bed. The heavily saline waters of Lake Van still cover its deepest section. The exposed lake bottom consists of volcanic matter carrying fertilizers in abundance. Rich brown loams therefore contribute to the region's famed fertility. Between the tenth and ninth centuries B. C. the Vannic community became the nucleus of a confederacy of mountain tribes forming the kingdom of Urartu,[22] which extended to the heads of the valleys debouching on

[20] Cf. inset on accompanying map entitled "Part of Asiatic Turkey showing Distribution of Peoples."

[21] As these lines are written (Aug., 1915) accounts of the expulsion of Turks from the plain of Van by the Armenians filter through the press news.

[22] The Mexican parallel is too striking to be omitted here. The southern end of the plateau of Anahuac, on which the waters of Lake Texcuco receded within historical times, is the center of the stage of Mexican history. Surrounding this open land numerous narrow valleys were peopled by independent tribes which eventually banded together under the leadership of the community growing near the central body of water. This lake confederacy became Cortez' most powerful opponent when the conquistadores undertook their memorable expedition. Cf. F. J. Payne: History of the New World Called America, Clarendon Press, Oxford, 1899, pp. 450–463.

FIG. 3.

FIG. 4.

FIG. 3—An Armenian priest. Facially the Armenians resemble the inhabitants of Central Europe.
FIG. 4—Types of Mohammedan immigrants. The three men in this photograph are Albanians.

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FIG. 5—View of the plain of Van. The photograph shows the three features which make the site a center of Armenian history. The plain afforded farming land and was dominated by a lone eminence, to the protection of which Armenians have resorted to this very day. The broad lake in the background added to the natural strength of this position.

Assyrian territory.[23] After successful resistance against Assyria the independence of the Armenian state became well established about 800 B. C.

The ancient history of the Armenians is closely related to that of the Hittites. The appearance of the former is coeval with the disappearance of the latter. The probability of a common origin is strong. Enough light has been shed on the history of the Armenian tableland prior to 700 B. C. to enable us to divide its political subdivisions into two great groups. The Vannic states of the kingdom of Urartu held sway in the northern ranges. Hittite dominance extended in the southern group of mountains. It may be assumed that the Armenians of the present day are direct descendants of these ancient populations, due allowance being made for the invasion of Iranian peoples who brought Eastern culture to the land. The free inflow of this Eastern element was impeded, however, by the highly dissected tableland of Armenia. It trickled westward without ever assuming the proportion of a flood. Hence the Armenian physical type is preserved with considerable purity beneath the shroud of Aryan culture.

The Armenians call themselves Hai and trace their descent to a mythical mountain chief Haik. Hai-istan is the name of their native land in Armenian. The word Armenia itself is of Persian derivation and foreign to Armenian. A remote possibility of the connection of Hai with the old name of Hit or Hatti may be advanced in view of the frequency with which the elision of the letter *t* or the replacement of *d-t* sounds by *y* occur in Armenian.[24] The etymology of the name, however, still awaits more thorough elucidation.

Planted squarely on the scene of the secular conflict between the civilizations of Europe and Asia, Armenia became in time the prey of the victor of the moment. But the united influence of site and configuration asserted itself more than once during this long struggle to confer independence on the Armenians. As a buffer between Eastern and Western empires the country enjoyed three distinct periods of native rule prior to the Ottoman conquest.

Throughout the course of these vicissitudes, Armenian life centered mainly around its mountain home. Nevertheless, altitude alone does not suffice to explain the characteristics of the people. Climate must also be taken into account. Armenians are distributed

[23] D. G. Hogarth: The Ancient East, Holt, New York, 1914, p. 74.
[24] Notably *t* is entirely eliminated from the third person singular of verbs.

in a belt extending one degree on either side of the line of south latitude 39°. Within this zone the products of the soil as well as the customs are those of temperate regions bordering on the warm. The narrow highland valleys are wonderfully fertile. Wheat is harvested before July at an elevation of 3,600 feet in many districts. The country enjoys fame for the variety and excellence of its fruits.

Little wonder, then, that traits which distinguish populations reared in sunny lands should also prevail among the dwellers of this rugged mountain zone. Voluble in the extreme, endowed with a highly developed imaginative sense, delighting in an innate tendency to aggrandize and magnify the facts of ordinary life, the Armenian is merely an Eastern counterpart of the celebrated Tarasconese created by Daudet's genial fancy as the type of southerner.

But a rocky environment is equally reflected in the minds of the Armenians. Harshness of manner and a certain degree of uncouthness are present along with tenacity of purpose and moral fortitude, which are national traits. Through the latter, endurance of Turkish persecution, which has generally assumed exceedingly savage form, was made possible. Armenians are also known for their martial spirit. Dwellers of many of the less accessible recesses of the Tauric or Armenian highlands have held their Turkish foes in check for centuries and have managed to maintain a state of semi-independence in the midst of their conqueror's land.

Again, the influence of the mountain home of the Armenians is expressed in their art. Poems and songs often extol the fairness of the valleys where rest will be found after descent along interminable slopes. Sometimes the beauty of lakes, embosomed in high plateaus, fires the poet's fancy. Towering summits figure in legend as steeples from which melodious chimes cast forth their tones. Armenian music, too, resounds with echoes that seem to reverberate from valleys cut deep in the sides of their mountains.

Perhaps it is these varied influences which convert the rough and mannerless mountain boors into the most polished and cultured citizens of Turkish cities. They have the reputation of being energetic business men. Their honesty is proverbial among the Turks, who generally intrust the management of estates or domains to their hands. Western progress finds receptive minds among them alone throughout the inland districts of Asiatic Turkey.

The size of the Armenian population of Asiatic Turkey has never been accurately determined. The notorious inaccuracy of Turkish statistics renders them altogether unreliable. Furthermore the

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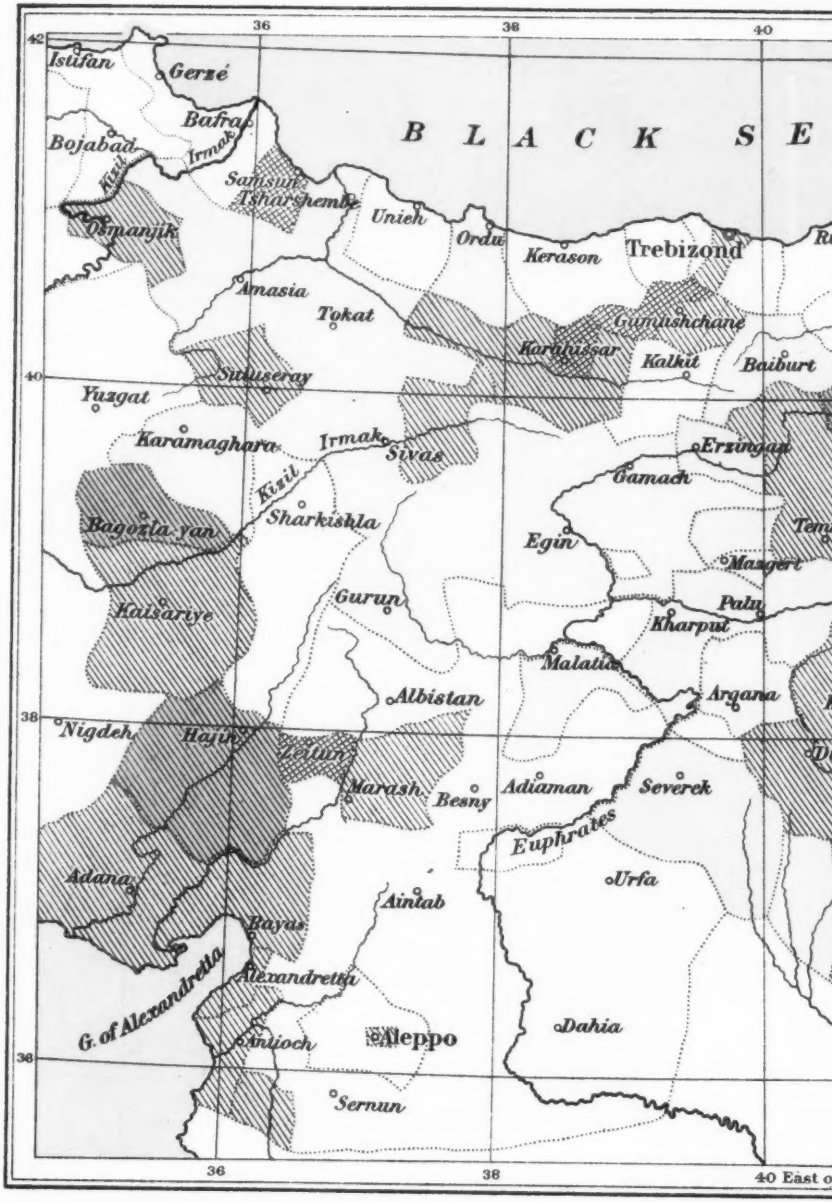
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Amasia
Tokat
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Karahissar
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Baiburt
Sidiseray
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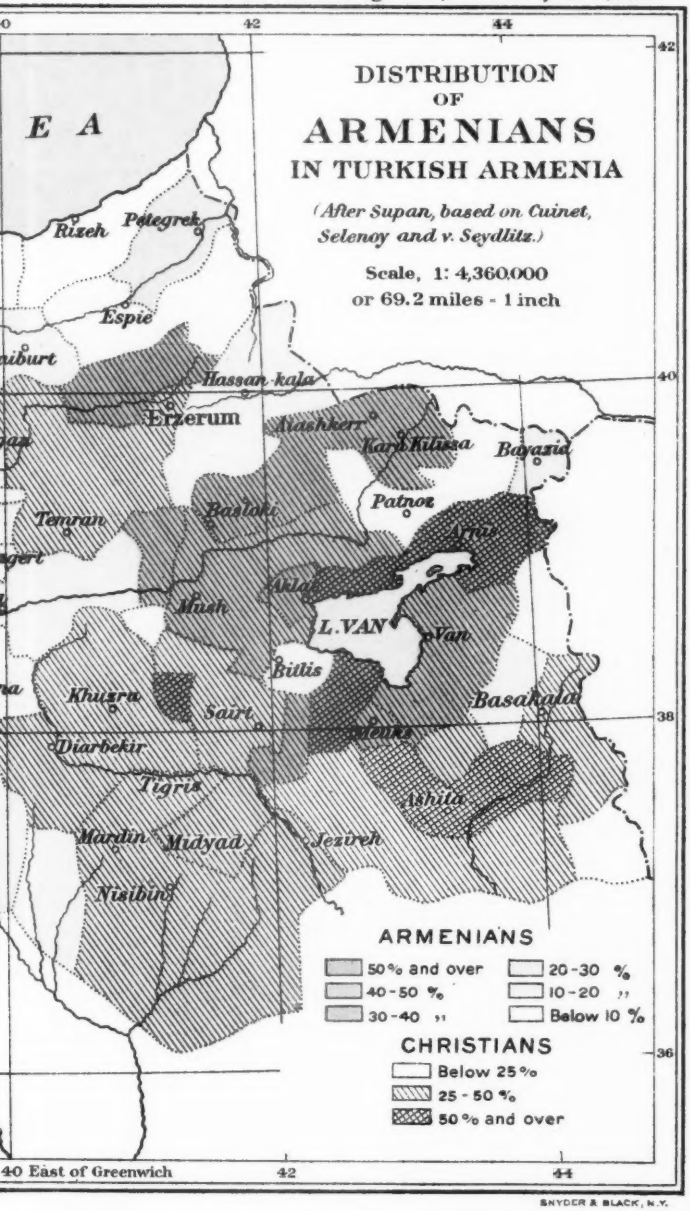
DISTRIBUTION
OF
ARMENIANS
IN TURKISH ARMENIA
(After Supan, based on Cuinet, Selenoy and v. Seydlitz.)
Scale, 1: 4,360,000
or 69.2 miles - 1 inch
E A
Rizeh
Petegrek
Espie
Hassan kala
Erzerum
Alashkert
Karb Kilissa
Bayazid
Patnos
Tenman
Bashkale
Aras
Akhlat
Mush
L. VAN
Van
Bitlis
Khusrn
Saurt
Basarkala
Diarbekir
Tigris
Ashita
Mardin
Midyad
Jezireh
Nisibin
ARMENIANS
50% and over
40-50 %
30-40 ,,
20-30 %
10-20 ,,
Below 10 %
CHRISTIANS
Below 25%
25 - 50 %
50% and over
42
44
40
38
36
40 East of Greenwich
42
44
SNYDER & BLACK, N.Y.

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boundaries of Turkish administrative provinces have been drawn with the sole view of creating groupings in which the Mohammedan element would predominate in every instance. The estimate of 2,100,000 Armenians for Asiatic Turkey given by so reputable a source as Major-General Sir Charles Wilson[25] is undoubtedly high. Cuinet's figures given by Selenoy and Seidlitz[26] probably come nearer the truth. The wholesale slaughter of Armenian males which has been systematically conducted by the Turks for the past twenty years, added to emigration, renders the existence of over 1,000,000 Armenians in Asiatic Turkey at present as highly improbable, and the only districts of any size in which they constitute a majority in the population are found west of Nimrud Dagh in the plains surrounding Mush as well as in the Kozan district north of the Cilician plains.[27]

Kurds

An Alpine zone of transition connecting the plains of northern Mesopotamia with the surrounding mountains on the north and east became the homeland of the Kurds. In a broad sense it is the drainage area of the Tigris and Euphrates. It is also the site of important mountain gaps through which human movements from east to west or vice versa have proceeded. Before the consolidation of Turkish authority in this region, a matter of less than a century ago and still in an imperfect stage of completion, Kurdish clans, each under the sole leadership of their respective chieftains, controlled the passes through which traffic from the southern lowlands or the eastern plateau was directed towards the Anatolian tableland. They exacted heavy tolls from passing caravans and derived their chief source of revenue from these levies.

Their manner of living conforms with the intermediary character

[25] Handbook for Travellers in Asia Minor, Transcaucasia, Persia, etc., Murray, London, 1911, p. 75.

[26] *Petermanns Mitt.*, Vol. 42, Jan. 1896, p. 8; and for details V. Cuinet: La Turquie d'Asie, Vols. i-iv, Leroux, Paris, 1891-94.

[27] The Armenian population of Turkey is divided by creed into three distinct communities. The vast majority—probably about ninety per cent.—belong to the Gregorian sect of Christianity. Adherents of the Roman Catholic faith are found chiefly in western Asia Minor. Protestant congregations have sprung around the educational institutions maintained by British or American missionary societies. Let it be noted here that many Mohammedan communities in Armenia consist of Armenoid individuals whose membership in the fold of Islam is the result of forcible conversions since the rise of Ottoman power. The Dersimlis, who inhabit the region between the two main branches of the Euphrates, have the reputation of being crypto-Christians of Armenian blood. Moslems of Armenian origin are also known in the village of Karageben on the Tehalta River east of Divrik. In Russia the Armenians number a scant million souls. Half of this community is scattered in the valley of the Arax and in Erivan province.

of their habitat. The semi-nomads of the plains and southern hills seek cool uplands during the summer months. In winter they descend to the warm plains with their flocks and herds and mingle with their Arab neighbors. Their instinct for seasonal migrations has been developed to such an extent that they cannot refrain from maintaining their semi-annual movements in the Armenian districts to which they have been forcibly removed by the Turkish government, desirous of insuring Mohammedan predominance in the Christian valleys of Armenia.

Language and religion carry the Kurds back to eastern ancestry. However diverse their dialects, Aryan roots forming the framework of their speech have survived in spite of admixture of Armenian, Turkish and Arabian words. By creed they are generally upholders of Shiite tradition in its westernmost confines. But their religious views vary from tribe to tribe and present as composite a character as their race. Many are Sunnis. Wandering into eastern Asia Minor since hoary antiquity they have culled from Paganism, Christianity and Islamism alike. The predominance of the ideals which inspire these faiths among the individual clans probably affords a clue to the period of their arrival in the localities which they now inhabit.

Similarly, the racial relations of the Kurds with peoples found east of their land is well established.[28] They are undoubtedly a branch of the Indo-European family though perhaps not to the extent to which von Luschan would connect them with inhabitants of northern Europe. From the writer's own observations the "generally blue eyes and fair hair" are by no means dominant in the regiments of Hamidyeh cavalry recruited exclusively from among Kurdish tribesmen.[29] The three groups studied by the eminent anthropologist near Karakush, on the Nimrud mountain, and at Sinjirli were probably remarkably pure, as might be inferred from the nature of their secluded districts. As early invaders of a transition land the Kurds have intermingled extensively with both highland and lowland populations.[30] The Kurd varies hence according to region, the inhabitants of the elevated sections being stocky and of massive build, while the tall and sallow Semitic type appears among them on the border of the southern plains.[31]

[28] F. von Luschan: The Early Inhabitants of Western Asia, *Ann. Report Smithsonian Inst. for 1914*, pp. 561-562.

[29] "Rarely of unusual stature . . . . , complexion dark" is Wilson's description. Handbook for Travellers in Asia Minor, Transcaucasia, Persia, etc., Murray, London, 1911, p. 64.

[30] Mark Sykes: The Kurdish Tribes of the Ottoman Empire, *Journ. Anthrop. Inst.*, Vol. 38, 1908, pp. 451-486.

[31] B. Dickson: Journeys in Kurdistan, *Geogr. Journ.*, Vol. 35, No. 4, April 1910, p. 361.

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FIG. 6—Kurd children of the Armenian borderland. The poverty of the land is reflected in their appearance no less than in the arid background of the photograph.

FIG. 7.

FIG. 8.

FIG. 7—Kurds at harvest in Upper Mesopotamia.

FIG. 8—Kurd village in southern Kurdistan.

The Kurds, particularly in the semi-nomadic state, are noted freebooters. Travel in the districts they occupy is generally unsafe. Armenians and other Christians find them an inexorable foe. They are none too loath to prey even on Turks, although as a rule the latter obtain immunity in return for the lenient dealing of the government in cases of Kurdish depredations on non-Moslem communities. The strong arm of an organized police alone will end the lawlessness with which their name is coupled in Turkey.

Good qualities are not wanting. A Kurd is generally true to his word. The rude code of honor in vogue among their tribes is rarely violated, and, whenever disposed, the Kurd can become as hospitable as his Arab neighbors. The tempering influence of a settled existence among sedentary tribes is marked by harmonious intercourse with surrounding non-Kurdish communities. At bottom their vices are chiefly those of the restless life they lead in a land in which organized government has been unknown for the past eight centuries.

Syrians

Syria is the elongated land passage, barely fifty miles in width, which connects northern Africa with western Asia. It is one of the world's best-defined natural regions. The sea on the west, and the desert on the east, sharply mark off its fringelike extension. On the north the Amanus ranges constitute a wall that has proved well-nigh impassable to Semites. To the south the land naturally ends in the Sinai Peninsula.[32]

The province is mountainous in its northern half. Its mountains are the monuments that throw light on the utter failure of the cause of human progress in northern Syria. A single redeeming feature, the Orontes River valley, favored foreign contact. Western ideas filtered into the land at its mouth on the Mediterranean, while a blend of Eastern influences, Persian or Arabian, flowed down with its waters. All converged at Antioch, the region's greatest center of life and a true product of the Orontes' lower course. Absence of relief in southern Syria, however, was coupled to a Mediterranean climate and fertile soils. These permitted the development of the flourishing civilizations of antiquity. Herein lies the physical basis of the historical evolution of the Syrian fringe and the explanation of the growth of nations and of world religions in its southern lands.

[32] De Torcy: Notes sur la Syrie, *La Géogr.*, Vol. 27, No. 3, March 15, 1913, pp. 161–197; No. 6, June 15, 1913, pp. 429–459.

As a land-bridge of early humanity Syria was necessarily the scene of much coming and going at a time when the civilization of the world was largely confined to what is now known as Asiatic Turkey. Its population therefore presents a mixed character. Hittites, Arameans, Assyrians, Egyptians, Greeks, Romans, Arabs, and Turks conquered the land in turn and imparted their native customs to its inhabitants. Dwellers of its southern area are now transformed almost beyond the possibility of analysis. The settlements of the elevated and broken northern area, on the other hand, represent very ancient communities.

The mountains of Syria harbor strange denizens in their northern end. In the northern Lebanon many villages of the western slopes are inhabited by the Metauilehs, who are Shiite dissenters and bear unenviable reputation for ignorance and inhospitality.[33] Their own traditions point to Persian or Arabian origins. Religion seems to confirm the former claim. At the same time they are known to the Syrians as a sturdy mountain people. Scattered through the same mountain districts the Ismailyehs, another highland folk who under the name of Assassins enjoyed sinister fame during the Middle Ages, maintain their abode in inaccessible valleys. The epithet which is coupled to their name is an altogether illogical rendering of the Arabic "hasheeshin" and does not convey any worse meaning than that of "hasheesh" fiends.

Ansariyehs

The Ansariyehs, or Nusariyehs, form an important group among northern Syrians. Their settlements are generally confined to the grassy seaward slopes of the mountains stretching north of the Nahr-el-Kebir towards the Gulf of Alexandretta. They also occupy villages in the plains surrounding Antioch. In recent years they have shown a tendency to abandon their mountain homes for the less arduous life of the plains. Officially they are regarded as Mohammedans and bear Mohammedan names, but the religion which differentiates them from the other inhabitants of northern Syria teaches Christian and Sabean doctrines alike. It is believed that they still maintain observances of exceedingly ancient nature cults. The fundamental principles of their creed are transmitted by word of mouth and with injunction to secrecy.[34] It is known that their

[33] L. Gaston Leary: Syria, the Land of Lebanon, McBride, Nast & Co., New York, 1913, p. 10.

[34] R. Dussaud: Les Nossairis, *Bibl. de l'École des Hautes Études, Sciences, Philosophie et Histoire*, Paris, 1900, Vol. 129.

deification of the conception of fertility is couched in highly metaphorical language in which the productivity of the earth and of the human race is extolled. By making proper allowance for the imagery which clothes the wording of their prayers it will probably be found that their religion resolves itself into a relic of the worship of the mother-goddess which was deeply rooted throughout the mountain districts of Asia Minor. Hints of nocturnal orgies accompanying their worship should be taken with a grain of suspicion, as orthodox Mohammedans are prone to advance imputation of this character whenever dissension from the Koran is suspected. In this Mohammedans merely follow the lead of Byzantine Christians in whose eyes the relics of Anatolian paganism were as obnoxious as the heresies of their own times.

The ancestors of the Ansariyehs and other small sectarian groups in northern Syria were closely related to their powerful Hittite neighbors. These peoples all occupy together with the Druzes and Maronites the southern limit of known Hittite monuments.[35] Their land is the frontier zone between Syria, Asia Minor and the Armenian highland. It is studded with ruined strongholds which figured prominently in ancient battle scenes.

Druzes

The southern Lebanon and Anti-Lebanon ranges in the rearland of the Haifa-Beirut coast[36] are inhabited by Druzes. Tribes of this people are met as far southeast as the Hawran volcanic uplift, whither they have steadily emigrated from the Lebanon in the course of the past hundred years and where they have succeeded in dislodging the former Bedouin inhabitants of the region. These Druzes are best known for their warlike disposition. Although numerically inferior to the Christian population of their native districts, their bellicose qualities have earned them predominance in central Syria. In religion they are pure monotheists. Their standard of morality is high. They call themselves Mohammedans but do not maintain mosques and rarely practice polygamy. Orthodox Moslems generally repudiate them on account of the discrepancy between their teachings and the tenets of the Koran. As far as can be determined the doctrines of the Mosaic law, the Gospels, the Koran and Sufi alle-

[35] J. Garstang: The Land of the Hittites, Constable & Co., London, 1910, pp. 15, 16.

[36] About forty towns and villages are held by the Druzes in the southern Lebanon. In the Anti-Lebanon districts they people eighty villages and share possession of about two hundred with their Christian kinsmen, the Maronites.

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gories are represented in their creed. Often when with Christians they will not hesitate to assert belief in Christianity. The leaven of Iranian influences which pervades their doctrines estranges them from the surrounding Semitism to the same extent that they are highlanders having little in common with the plainsmen settled around their elevated home. The dominance of this Eastern strain in their thoughts does not, however, necessarily indicate racial migrations. Historical testimony is available to prove that the known form of Druze religion can be traced to the teachings of Hamze, a Persian disciple of Hakem.[37] The case is more probably that of an infiltration of foreign ideals and its retention within a region deprived by its relief from intercourse with the more progressive life of the surrounding lowland.

Maronites

Closely related to the Druzes are their northwestern neighbors, the Maronites, a Christian people who seceded from the Roman church in the great schism that followed the council of Chalcedon in 451 A. D.[38] They form a compact mass settled on the western slopes of the Lebanon Mountains between the valleys of the Nahr-el-Kebir and the Nahr-el-Barid. Mountain isolation and intermarriage maintained remarkable purity of an old type among them. Being better farmers than warriors they have suffered from the oft repeated depredations of their warlike neighbors.[39] Enmity with their Mohammedan neighbors dates from the time of the Crusades when the Maronites had sided with the Christian knights.

Jews

The Jews of Turkey include a small remnant of the captivity settled around Jerusalem and in Mesopotamia.[40] After the destruction of Jerusalem the valley of the Tigris became the most important seat of the Hebrews. Parthian tolerance granted them a par-

[37] Hakem was a Fatimite caliph of Egypt, who ruled in the early eleventh century. He incurred the hatred of his subjects by causing the incarnation of God in himself to be preached in Cairo by Darasi, his chaplain. Both became so unpopular that they were forced to escape from the capital to the Lebanon, where they succeeded in imposing their doctrines on the mountaineers. The name Druze is believed to be derived from Darasi.

[38] In recent years the Maronites have submitted to the authority of the Vatican. In return certain privileges, such as that of retention of Syriac liturgy have been accorded to them. They constitute a veritable theocracy, all tribal and community affairs being handled by the clergy.

[39] The French military expedition to the Lebanon, undertaken in 1860, was caused by the massacre of over 12,000 Maronites by the Druzes in that year.

[40] This group comprises about 90,000 souls in Syria and 40,000 in Mesopotamia.

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FIG 9.

FIG. 10.

FIG. 9—A family of sedentary Arabs in Mesopotamia.

FIG. 10—Maronite women—the highlanders of Syria. Note their sturdy appearance.

tial autonomy under the authority of a chief chosen from among the descendants of the house of David.[41] This liberal régime ended with the decline in power of the Abbasside caliphs of Bagdad. The Jews were then forced to abandon Chaldea. Many emigrated to Spain. Later, under the reign of Ferdinand and Isabella, they were compelled to flee from Spanish persecution and seek a home again in Turkey. Descendants of these emigrants known as Sephardim are settled in the cities of Asia Minor and Syria. Small colonies of Ashkenazim Jews are also scattered in various Turkish towns. An old colony of a few hundred Samaritans survives in the vicinity of Nablus.

The Jews are an exceedingly composite people and, contrary to popular belief, do not represent as pure a type of the Semitic race as the Bedouin Arabs. Southern Syria was a prey to invaders from every quarter of the compass. It was the clashing ground of Hittite and Nilotic civilizations. From the west, Mediterranean seafaring populations swarmed in since earliest antiquity. At least three great waves of Semitic migrations attained the land prior to the coming of the Arabs. The Jew, therefore, represents the fusion of four distinct races of men. The purity he has retained is that of the fused type. His language alone is Semitic. His physical appearance recalls Hittite traits more prominently than Semitic and this probably accounts for the frequent mistaking of Armenians for Jews in Western Europe and in the United States.

Arameans

The Arameans are either direct ancestors of modern Jews or else close congeners of early Hebrews. Both peoples are closely allied. They represent one of the many waves of Semitic humanity which have rolled out of Arabia's highland steppes. A period of settlement in the fertile districts around the mouth of the Euphrates and Tigris precedes their spread throughout Mesopotamia and northeastern Syria. References to their history abound in holy texts, as well in inscriptional remains[42] found throughout Western Asia. The accounts, however, are fragmentary and so far have only allowed partial reconstitution of their history. An Aramean nation or a number of Aramean states undoubtedly existed in the tenth century B. C. This body subsequently acquired considerable power

[41] E. Aubin: La Perse d'aujourd'hui, Colin. Paris, 1908, p. 418.

[42] The Elephantine papyri discovered on the island of Elephantine in southern Egypt between 1903 and 1906 contain Aramaic texts of the utmost historical value.

and founded colonies over all of Mesopotamia and Syria. Damascus and Hamath, both in the latter province, became the greatest centers of Aramean power, thanks to the natural resources of the districts around their sites as well as to their commanding position on important trade routes. It seems established that the vast territory designated by the Assyrians by the name of "Mat Aram," or land of Aram, did not necessarily contain Aramaic populations. It was more probably conquered by Arameans, who imposed their language on the subjugated peoples. Soon after the capture of Damascus by the Assyrians in 732 B. C. the Aramean nation disappears from history. Aramaic, however, survived and was even adopted by the victors.[43] But, in common with other Semitic languages, it could not withstand the advance of Arabic. The only locality in which it is now spoken is found northeast of Damascus in the environs of the villages of Malula, Bakha, and Yubb Adin, where the natives still use a dialect similar to the Palestinian Aramaic spoken thirteen centuries ago. There is reason to believe that this sub-group of Syrians represents today the old Aramean stock in as pure a degree as is consistent with the secular mingling of peoples which has taken place in the region.[44]

Yezidis

The Sinjar range of hills stretching in a westerly direction from Mosul is the only upland of importance in the Mesopotamian valley. The largest compact mass of Yezidis are domiciled in this hilly country. A minor group occupies the Samaan mountains in Syria.[45]

The appellation of devil worshippers which generally accompanies the name of Yezidi conveys a totally erroneous impression regarding their beliefs. They recognize, in fact, a Benign Deity, the Khode-Qanj, who reigns supreme over creation, but with whom is associated an inferior divine essence, the Malik-i-Tawus, or Peacock King, who is lord of all evil and whom they consider necessary to propitiate in order to avert misfortune. But the ceremonies and sacrifices performed in honor of the subordinate deity do not interfere with the primary worship with which the God of Good is

[43] O. Procksch: Die Völker Altpalästinas, Hinrichs, Leipzig, 1914, p. 30.

[44] At the end of the pre-Islamic period the region west of the Euphrates to the eastern slopes of the Lebanon Mountains was known to the Arabs as "Beit Aramyeh," or land of the Arameans.

[45] H. Lammens: Le massif du Gebal et les Yezidis de Syrie, *Mélanges Faculté Orient. Univ. Beyrouth*, 1907, pp. 366-407.

revered.[46] This interpretation of divinity bears deep analogy to the Iranian cult which revolves around the central figures of Ormuzd and Ahriman respectively, the Good and Evil Principle. The language of the Yezidis, which is akin to Kurdish, brings added evidence for the Eastern derivation of their culture.

According to their own traditions the Yezidis claim to have come originally from the districts of the lower Euphrates. Certain Sabean features of their religion indicate intimate contact with Semitic populations. Little is known about the curious tangle of their religious celebration to which strangers are never admitted. Their practice of bowing before the rising sun at dawn is a clear relic of Zoroastrian influence. They also perform rites which have analogy to Christian commemorations. In a land overrun in all directions any particular feature of the views they hold cannot be made to account for their origin. The religion of the moment was imposed by the dominant element over all the peoples of Asiatic Turkey. A given group, hence, merely shows successive strata of religious invasions.

Racially the sturdily built Yezidi is active and hardy. His energy sets him apart from the lithe-limbed and easy-going Arabs. His vigor and fighting blood saved him from the frightful persecutions for which the particularly obnoxious feature of his dual deity was responsible. Byzantine bishops and Arabian *mollahs* in turn reserved the wildest thunder of their intolerance for the Yezidi, execrated beyond all others among heretics and unbelievers. This hatred of the presumed worshipper of the devil has not outlived its time, and a devout Mohammedan will today spit upon the ground and mutter a curse whenever the abhorred name crosses his lips.

The Yezidis enjoy fame as agriculturists who know how to exact good yield from their mountain farms. They live a retired life and rarely allow strangers to travel through the Sinjar range. The modern armament of Turkish expeditions has cowed the present generation into a submission which their fathers would scorn. But they still remain unwilling tax payers who rely on the natural disinclination of Turkish tax collectors to mountain climbing.

Nestorians

The Nestorians, a Christian sect, are descendants of the followers of Nestorius who seceded from established orthodoxy in the sixth century. They inhabit scattered villages in a region which changes

[46] W. B. Heard: Notes on Yezidis, *Journ. Anthrop. Inst.*, Vol. 41, 1911, pp. 200–219.

from mountain to plain as it extends west of the Persian frontier to the Tigris River, roughly between latitudes 34° and 38°. On the north they rarely venture beyond the Bohtan River. The mountainous tract produces a manly set, who have more than held their own against the martial Kurds. Poverty and dependence mark the lot of the plainsmen in spite of their industry as agriculturists.

To say that the inhabitants of Turkey have religious nationality is perhaps the happiest way of accounting for the presence of large numbers of independent communities owing political allegiance to the Sultan. The bond of faith in the case of the Nestorians is one of remarkable strength, because this community represents the persecuted remnant of the ancient church of Central Asia. Owing to its situation on the very outskirts of early Christianity the church became engaged in propagating the Gospel on a scale exceeded only by the see of Rome in the sixth and sixteenth centuries.[47] Consciousness of this tradition has not forsaken the Nestorians of the present day. The great influence wielded by their patriarch or religious head, the Mar Shimun, as he is called, is a relic of former authority.

The speech of the Nestorians is a Syriac dialect in which Persian, Arabic and Kurdish words have found place. Religious services are conducted, however, in the uncontaminated language. The Nestorians call themselves Syrians and refuse to recognize any other appellation. Much confusion has arisen in the minds of travelers describing them owing to this fact.

Chaldeans

The Chaldeans are racially akin to the Nestorians, with whom they formed a single religious community prior to the seventeenth century. The hope of obtaining relief from Mohammedan persecution induced an important section of the old community to join the church of Rome at that time. In recent years, however, many have forsaken Roman Catholicism and formed a new sect which is known by the name of New Chaldeans. Protestant communities of this people as well as of Nestorians and Jacobites exist.

Jacobites

The rugged limestone district around Midyad is the home of another mountain people known as the Jacobites. Banded together

[47] A. P. Stanley: Lectures on the History of the Eastern Church, E. P. Dutton & Co., New York, 1909, p. 58.

by the ties of religion they form a community of husbandmen living aloof from their neighbors of divergent religious views. They are described as of warlike nature and independent spirit. Language also differentiates them from other Ottoman groups, a Syriac dialect differing considerably from Nestorian being in use among them.[47a] In Turabdin they speak an Aramaic dialect known as Turani. The Jacobites are noted for their aptitude for business. The important colony of traders founded in the eighteenth century in the vicinity of Bagdad owes its origin to the desert traffic and the Indian trade by way of Basra.

This folk traces its religious origin to the teachings of Jacobus Baradeus[48], who, in the middle of the sixth century, traveled through Asia Minor and consolidated scattered groups of Monophysite recusants into a single body. They constituted a large sect during the Middle Ages, but defections, notably in favor of the Roman church, thinned their numbers considerably since then. At present they muster hardly more than 15,000 individuals.

Sabeans

We are still in the dark concerning the history of the Sabeans, a people of probably Semitic origin who profess Christianity. They call themselves Mendai and are often known by the name of Christians of St. John. The community is small, numbering hardly 3,000 souls, mostly goldsmiths and boat-builders who ply their trade in the Arab encampments of the Amara and Muntefik sanjaks in the vilayet of Basra. They talk a Semitic dialect and dress like the Arabs, from which they can scarcely be distinguished.

Arabs

The Arab folk, sparsely distributed over the Syrian desert and forming the majority of the inhabitants of the featureless downs of Mesopotamia, symbolize the dying wave of the last flood of Semitic invasions. In the sandy waste of their western extension, their tribes, shifting perpetually from seat to seat, like the dunes around which they roam, consist of Bedouin or "tent men." The contribution of these nomads to society is as insignificant as the yield of their unproductive land of wandering. Towards the east, however, where two mighty rivers bring fertility and life to the soil, the genius of

[47a] H. Trotter, *Geogr. Journ.*, Vol. 35, No. 4, 1910, p. 378.

[48] F. J. Bliss: The Religions of Modern Syria and Palestine, Scribner's, New York, 1912.

FIG. 11—In the desert of Syria. A tribe of Anezeh Arabs moving to a new pasturage. A typical view of a migration from an exhausted pasture to a fresh one.

the race blossomed untrammeled and gave Mohammedan civilization to the world.

The purest living representative of the Semitic race is found among these Bedouins. The progress of civilization pursued its steady growth around their tent homes without affecting their lives. Better favored belts encircling the Syrian desert attracted the human migrations which took place in Western Asia. From the last outliers of the hill system fringing the southern Taurus to the northern confines of the Arabian peninsula, the patriarchal state of society prevailing today differs little from the condition in which a dreamer well past middle age found it fourteen centuries ago and brought it within the pale of modern thought by inspiring it with the enthusiasm of his own belief in a single God. Stripped of his religion and of his rifle, the Bedouin stands today before the historian as the living image of long remote ancestors whose invasions caused profound upheavals in the societies established east and west of his present tramping ground.

But the Arab settled in the long elongated plain watered by the Tigris and Euphrates can never lay claim to equal purity of stock. He lives in a land which by virtue of a great twin river system gave rise to the oldest civilization known to the world. Its inhabitants, whether aboriginal or invaders from the tableland on the east, derived more than the mere sustenance of necessity within proximity of the mothering watercourses. Surrounded by desert and mountain, this region naturally became a seat of population. Its native element, already much mixed, was assimilated to a large extent by the Arabs since the period of their appearance in Mesopotamia.

The floating masses of Bedouins have successfully resisted Turkish effort to induce them to abandon nomadism. Occasionally, as in the belt of Tauric precipitation or along the borders of the zone of Mediterranean rains no less than under the benign influence of Mesopotamian rivers, they become sedentary. They are then known as *fellaheen*. But the change is incompatible with their immemorial restlessness and implies loss of caste in their own eyes.

Summary

To unravel the hopeless confusion which, at first glance, seems to permeate human grouping in Turkey is largely a problem of geography. The region consists of a mountainous core and a series of marginal lowlands. Its elevated area is a link in the central belt of mountains which extends uninterruptedly from Asia into Europe.

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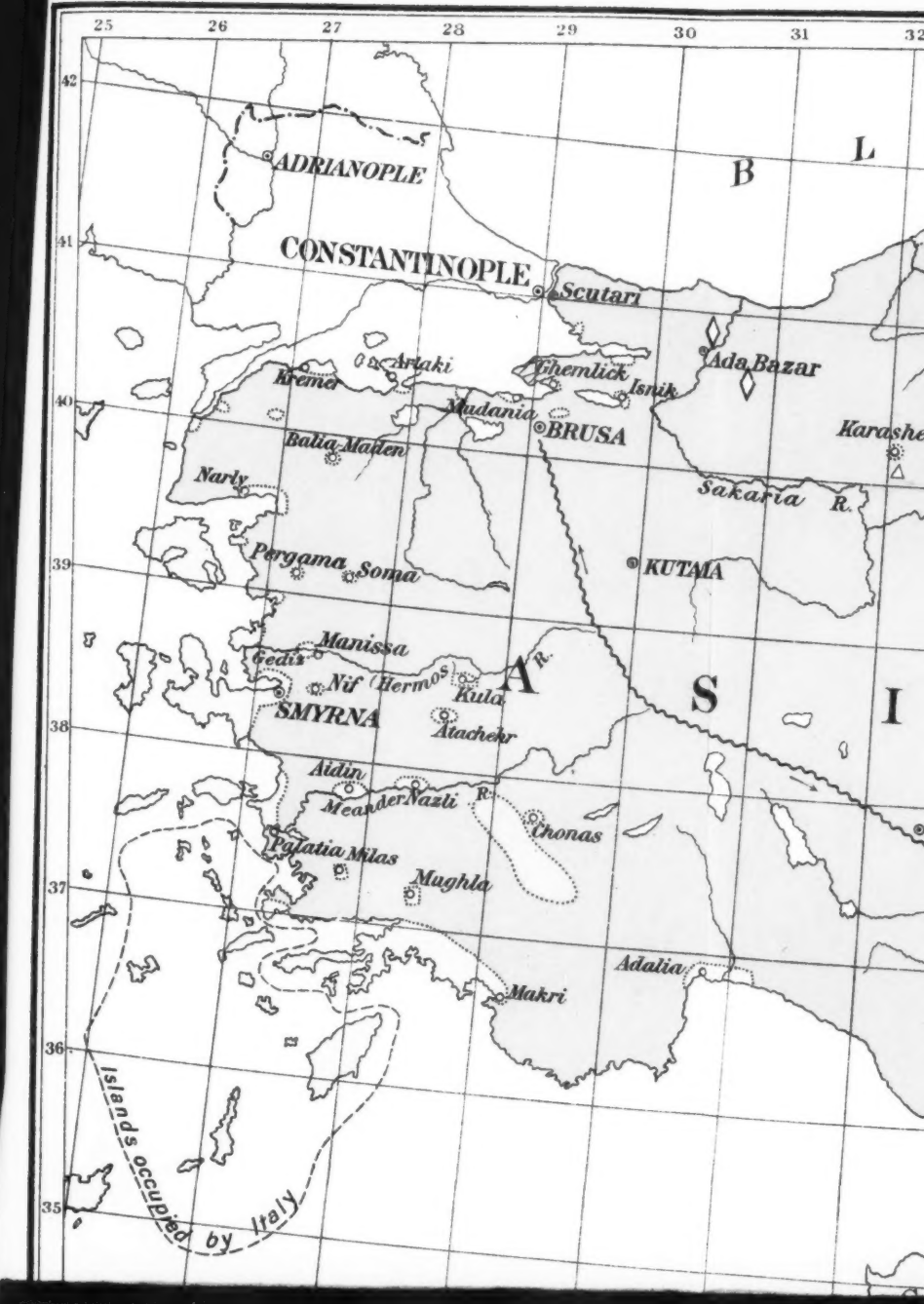
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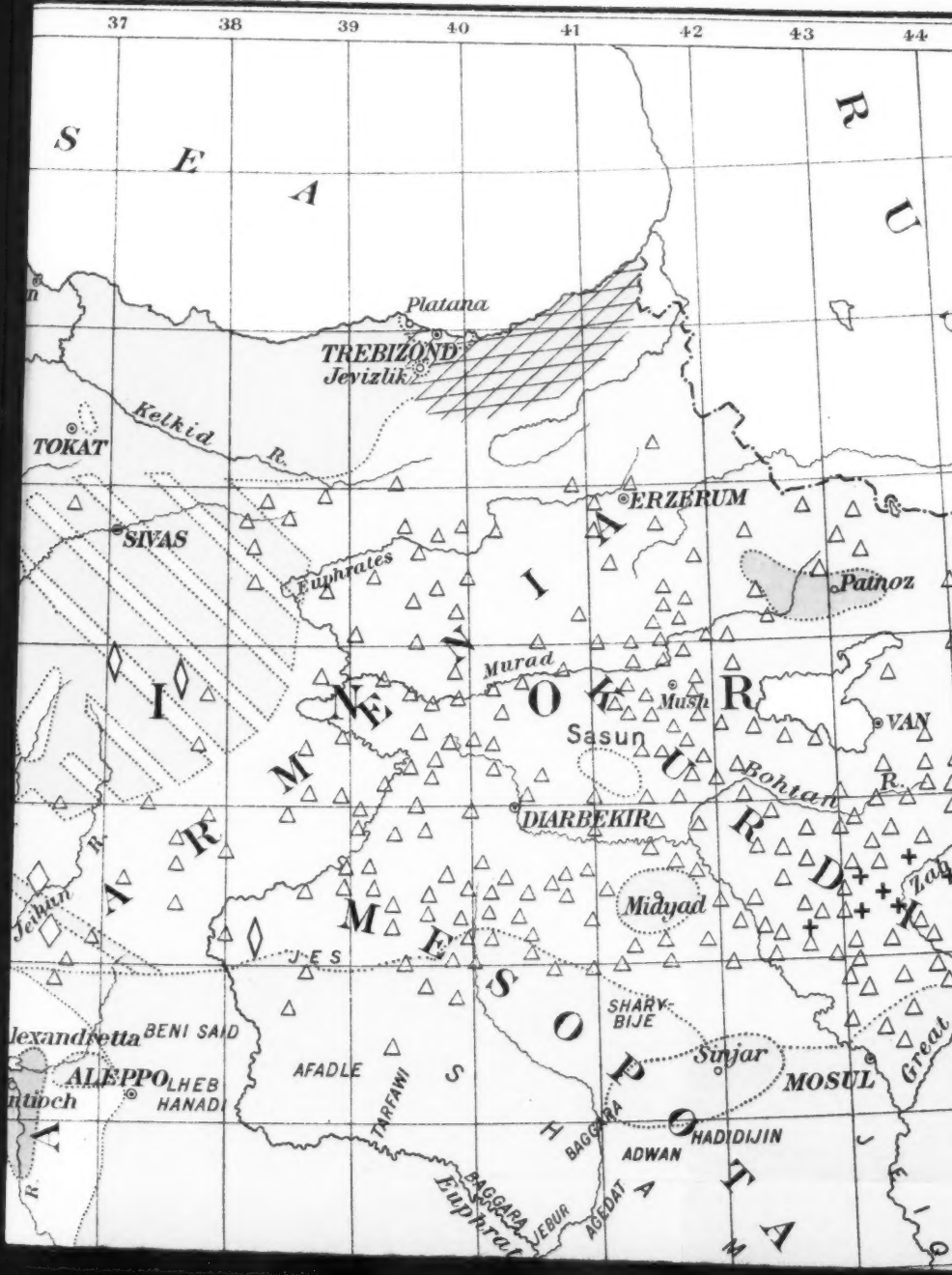
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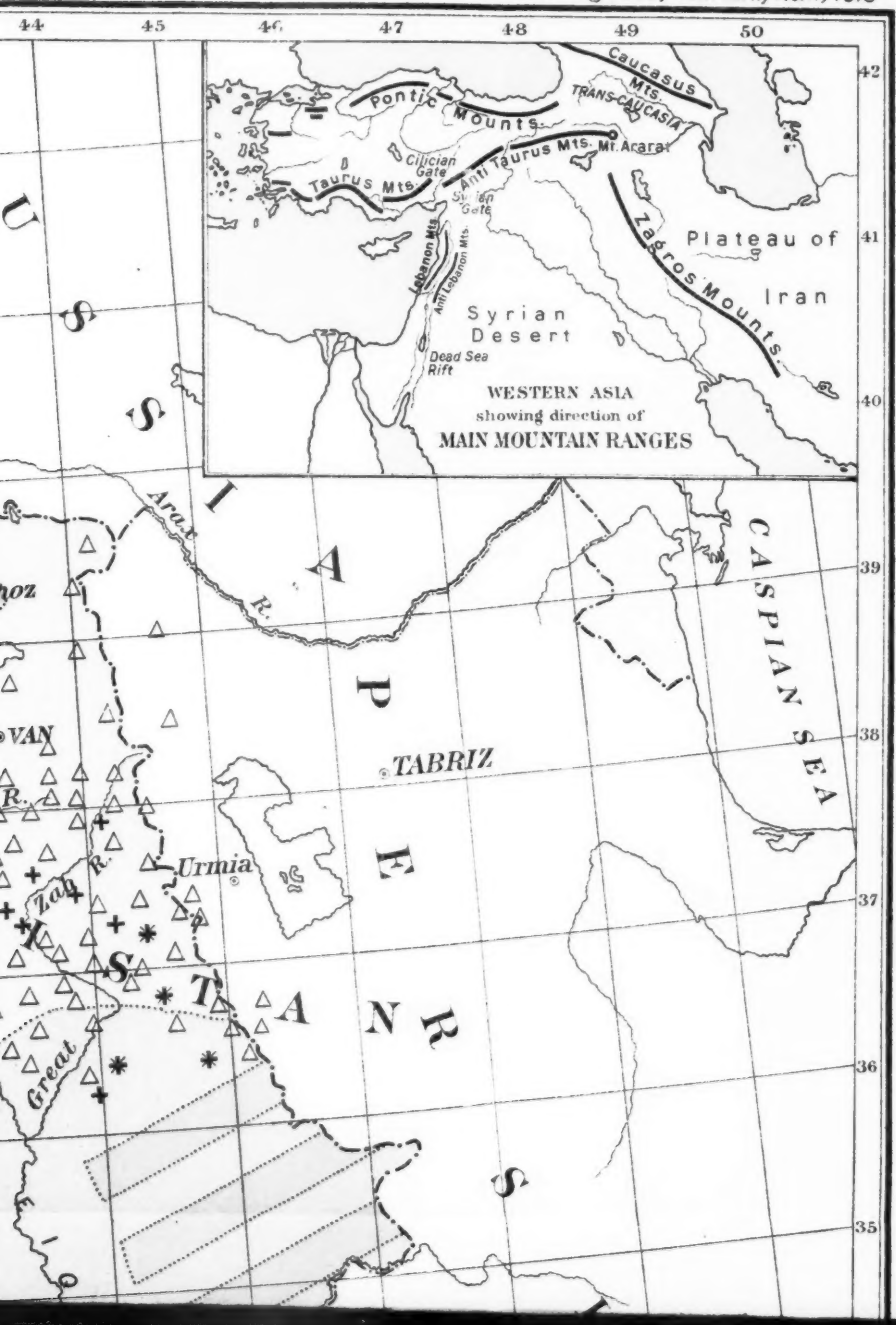
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Zagros Mounts
Plateau of Iran
Syrian Desert
Dead Sea Rift
WESTERN ASIA
showing direction of
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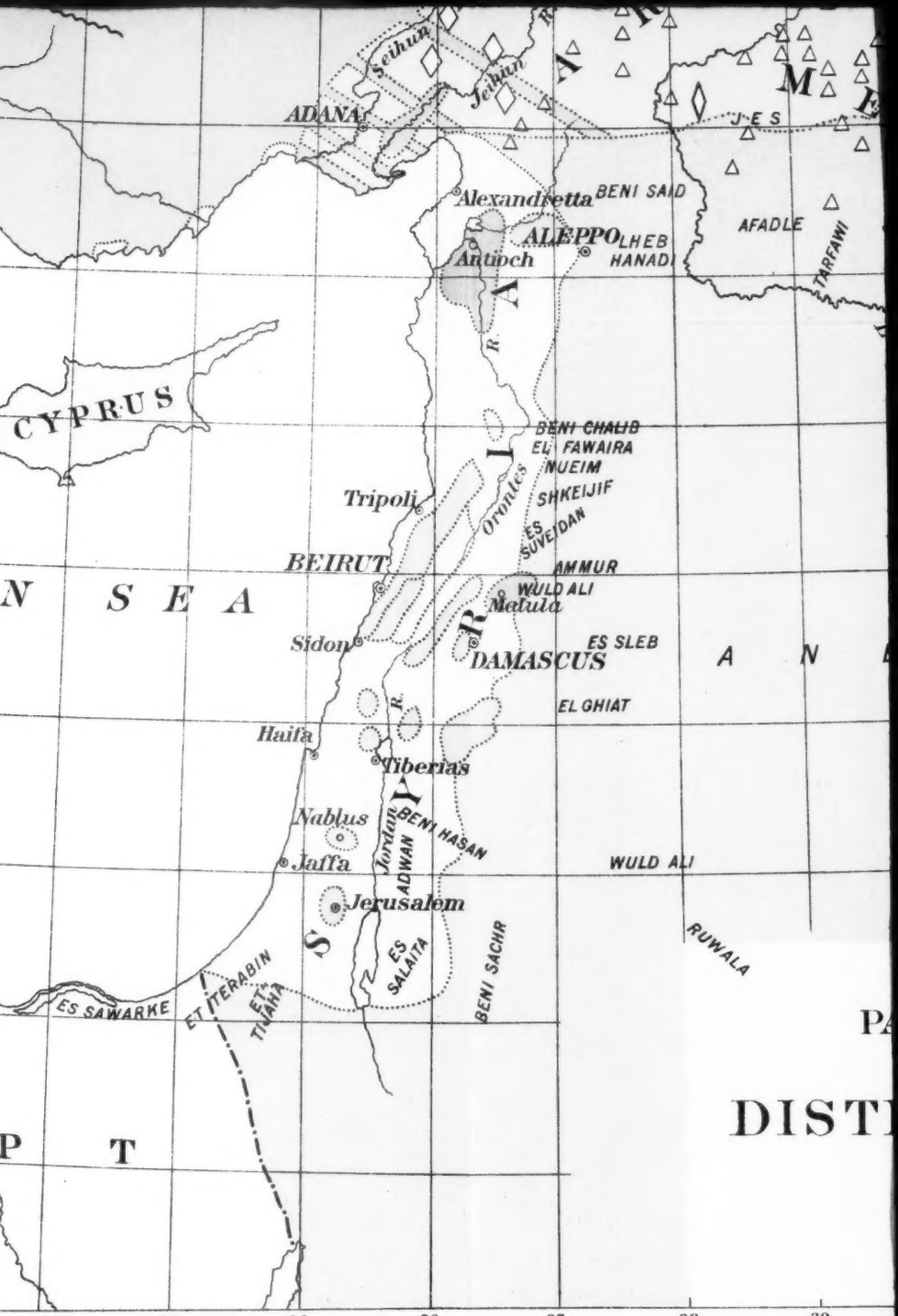
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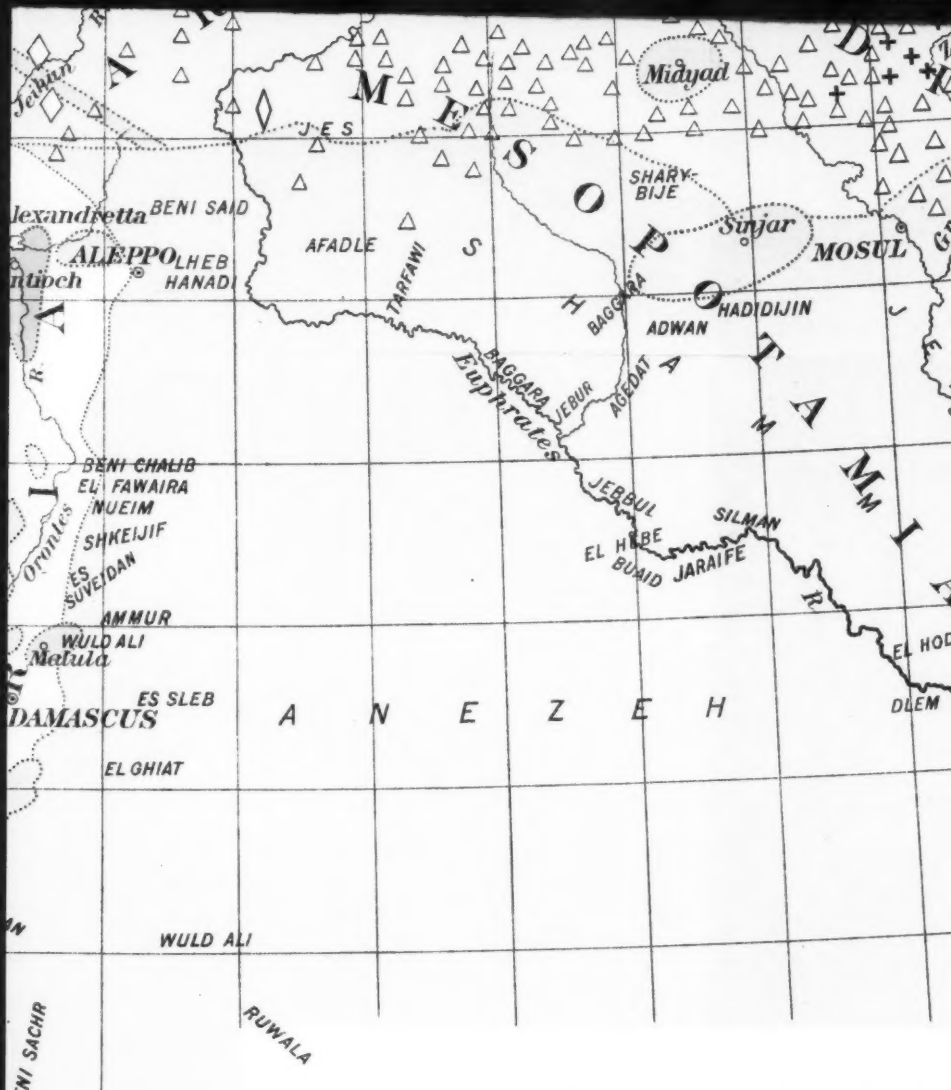

PART OF ASIATIC TURKE

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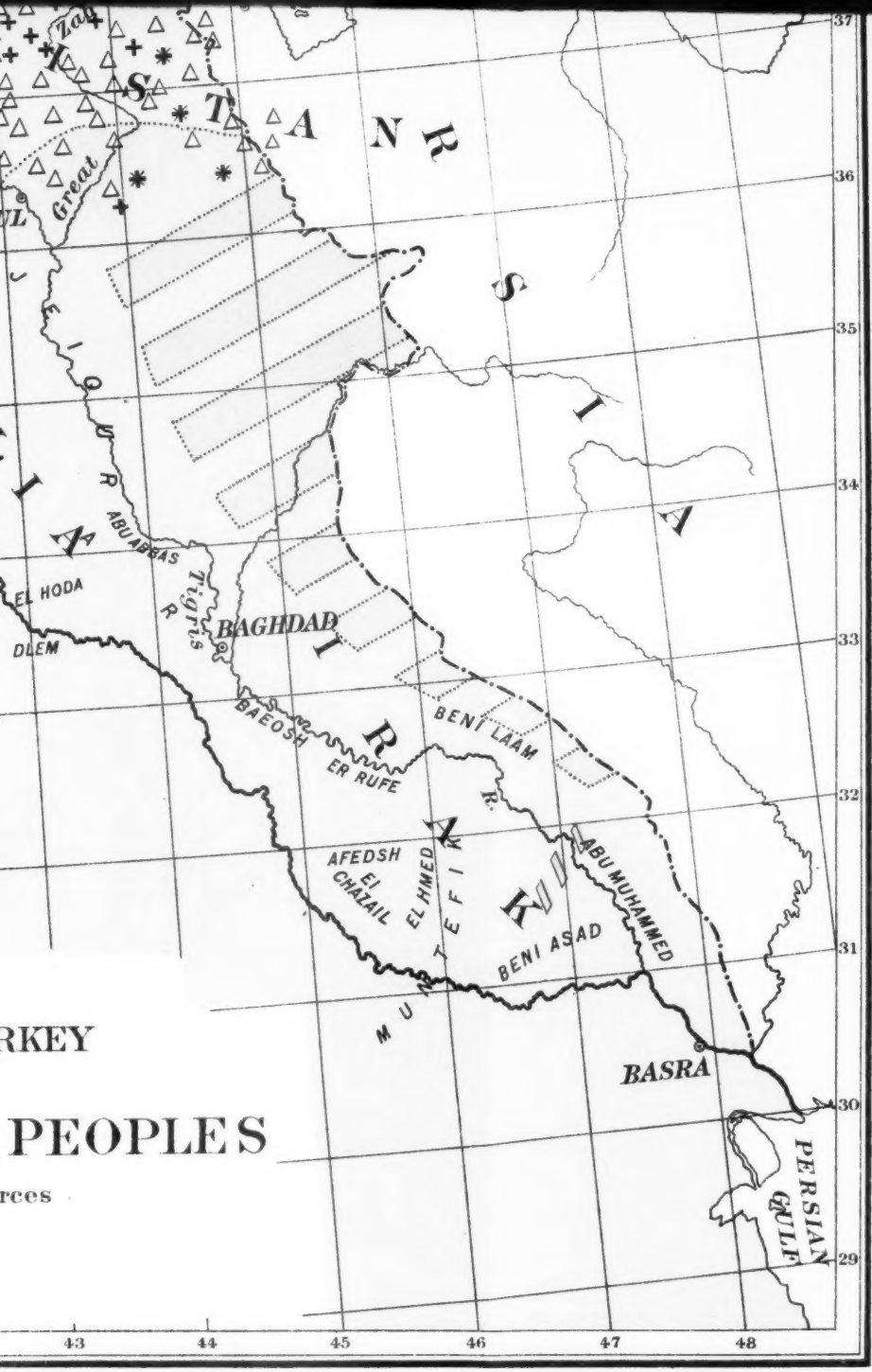

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PEOPLES

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This long chain of uplifts is the original seat of an important race of highlanders collectively known as *Homo alpinus*.[49] As far as is ascertainable to date the mountaineers of Turkey have all the anatomical characteristics[50] pertaining to this branch of the human family. Their religion and languages may differ but the type remains unchanged. Basing themselves on this physical relation anthropologists have assumed that Asiatic Turkey is the brood home of a subspecies of *Homo alpinus* which is gradually acquiring recognition as a primordial Armenoid element.[51] This type exists in its greatest purity today among the independent Mohammedan communities of the Anatolian tableland as well as among the Druzes and Maronites of Syria.

But by geographical position Asiatic Turkey is the junction of land thoroughfares which trend from south to north as well as in east-west directions. Its aboriginal population came inevitably into contact with the races whose migrations are known to have begun about 4,000 B. C. A second group of peoples is thus obtained in which the old strain is considerably modified. Armenians, Turks, upland Greeks, Jacobites, Nestorians and most of the Kurds represent this mixed element. A third group consists of lowlanders who never made the ascent of Turkish mountains and consequently carry no traces of Hittite ancestry. Maritime Greek populations and Arabs fall under this classification.

In the main we see that the mountain bears in its central part a homogeneous and coherent people. Distance from the core has slight effect upon the physical characteristics of the mountaineers as long as they do not forsake the upland for the lowland. Their ideas, however, undergo modifications which can be interpreted as concessions to the views of more powerful peoples with whom contact is established. Customs, however, generally remain unchanged even if they have to be maintained in secrecy.

Nevertheless, relief alone cannot account for the variety of peoples and religions in Asiatic Turkey. The easternmost fringe of Christianity emerging sporadically out of an ocean of Mohammedanism discloses by the variety of its discordant elements the extent to which distance from Constantinople, the religious capital of the Eastern church, had weakened the power of ecclesiastical authority. Armenians, Nestorians, Chaldeans, Jacobites and Maron-

[49] J. L. Myers: The Alpine Races in Europe, *Geogr. Journ.*, Vol. 28, No. 6, 1906, pp. 537–553.

[50] Cf. p. 837.

[51] F. von Luschan: The Early Inhabitants of Western Asia, *Ann. Report Smithsonian Inst. for 1914*, p. 577.

ites, one and all heretics in the eyes of Orthodox prelates, were merely independent thinkers who relied on the remoteness of their native districts in order to protest without peril to themselves against the innovations of Byzantine theologians or to stand firm on the basis of the rites and doctrines of early Christianity.

From the social standpoint the eastern half of Asiatic Turkey deserves investigation as the seat of an immemorial conflict between nomadism and sedentary life. Every stage of the transition between the two conditions may be observed. The feuds which set community against community in Turkey often originate in the divergent interests of nomad and settled inhabitant. Underlying them all the play of economic factors is constantly at work. As an example the Kurds of the Armenian highlands may be mentioned. The perpetuation of nomadism in their case is the result of extensive horsebreeding[52]—their chief source of revenue—, which compels them to seek low ground in winter.

Viewed as a whole Asiatic Turkey has changed from an ideal nursery of hardy men to a land of meeting between races and peoples as well as between their ideals. It may be safely predicted that the future of its inhabitants bids fair to be as intimately affected as the past by the circumstances of the remarkable situation of the country and its features. One can only hope for their sake that a thorough invasion of highland and lowland by the spirit of the West will not be delayed much longer. This much may be said now, that the establishment of Christian rule in the land would probably be attended by wholesale conversions to Christianity in many so-called Mohammedan communities where observance of Islamic rites has been dictated by policy rather than by faith.

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[52] D. G. Hogarth: The Nearer East, Appleton, New York, 1902, pp. 198-199.

PRELIMINARY CLASSIFICATION OF THE PEOPLES OF ASIATIC TURKEY

NAME	RACE	RELIGION	SPEECH	HOMELAND	ESTIMATED NUMBER
Allevis (see Tahtajis)					
Ansariyehs	Armenoid	Monotheistic	Arabic	Syrian Mts. and Cilician plains	175,000
Aptals	Armenoid	Sunni	Arabic	Syrian Mts.	uncertain
Arabs	Semitic	Mohammedan	Arabic	South of Tauric and Armenian Mts.	300,000?
Arameans	Semitic	Hebrew	Aramean		300
Armenians	Armenoid	Christian	Armenian (Aryan)	Armenian Highland, Taurus and Anti-Taurus ranges	500,000? *
Asdais (see Yezidis)					
Avshars	Turki	Shia	Turkish	Anti-Taurus	uncertain
Balikis	Armenoid	Mixed Mohammedan and Christian	Mixed Arabic, Kurdish and Armenian	Near Sasun	uncertain
Bejvans	Semitic	Mixed Mohammedan and Christian	Arabic	Near Mosul	uncertain
Chaldeans	Semitic	Roman Catholic	Syriac, Kurdish and Arabic	Near Diarbekir and Jezireh; Sert and Khabur basin	50,000
Chepmis (see Tahtajis)					
Circassians	Mixed Turki and Indo-European	Mohammedan	Turkish	Anatolia, N. Syria, N. Mesopotamia	500,000
Druzes	Armenoid	Mohammedan	Arabic	Lebanon; Anti-Lebanon, Hawran Mts., around Damascus	200,000
Greeks †	Mediterranean	Christian	Greek	Coast districts, mining districts, large cities	2,000,000 *
Jacobites	Semitic	Christian (Monophysites)	Syriac	Syria, Mesopotamia	15,000
Jews	Mixed Semitic, Mediterranean and Armenoid	Hebrew	Hebrew	Jerusalem; environs of Damascus	150,000
Karapapaks	Turki	Shia	Turkish	Tutakh-Patnoz	3,000
Kizilbash	Armenoid mixed with Turki	Shia, or mixture of Shiism, Paganism, Manichaeism and Christianity	Turkish	Angora and Sivas vilayets; Dersim	400,000
Kurds	Indo-European	Mohammedan	Aryan languages	West of the Sakaria River; Kurdistan	1,500,000
Lazis	Georgian branch of the Caucaso-Thibetan peoples	Mohammedan	Grusinian	Lazistan; north of Choruk Su, around Riza	uncertain
Maronites	Armenoid	Christian	Arabic	Mt. Lebanon, Anti-Lebanon	330,000
Metaulehs	Probably Armenoid	Shia	Arabic	Northern Lebanon	under 50,000
Nestorians	Armenoid	Christian	Syriac	Basin of the Great Zab; valleys of the Bohtan and Khabar	60,000
New Chaldeans	Semitic	Christian	Syriac	Alkosh	uncertain
Sabeans	Semitic	Christian	Syriac	Amara and Muntefik sanjaks of the Basra vilayet	3,000
Samaritans	Semitic	Hebrew	Hebrew	Near Nablus	300
Syrians	Semitic	Christian and Mohammedan	Arabic	Syria and Mesopotamia	uncertain
Tahtajis	Armenoid	Mohammedan	Turkish	Lycian Mts.	5,000
Tatars	Turki	Mohammedan	Turkish	Anatolia and Cilician plains	25,000
Terekimans (see Karapapaks)					
Turkomans	Turki	Mohammedan	Turkish	Angora, Adana and Aleppo vilayets	uncertain
Turks	Turki mixed with Armenoid	Mohammedan	Turkish	Anatolia mainly	8,000,000
Yezidis or Asdais	Mixed Armenoid and Indo-European	Devil-worshippers, mixture of the old Babylonian religion; Zoroastrianism, Manichaeism and Christianity	Kermanji	Kurt Dagh on the W. to Zakho E. of the Tigris; Badi near Mosul; Sinjar range.	40,000
Yuruks	Armenoid	Mohammedan	Turkish	Konia vilayet	uncertain

* The figures for Armenians and Greeks require revision in view of the systematic efforts of the Turks to extirpate these two peoples. The massacres of the entire Greek population of villages of the Ægean coast and atrocities of a most inhuman character perpetrated on the Armenians of inland communities have largely depleted the ranks of these two Christian peoples.

† Hellenes, or subjects of the King of Greece, number about 20,000.

INTERCOLLEGIATE GEOLOGICAL EXCURSION OF NEW ENGLAND

The thirteenth annual Intercollegiate Geological Excursion of New England, on October 16, was directed by Professor Joseph Barrell of Yale University. The main purpose was to study the complicated physiography of western Connecticut, between Waterbury and Torrington, and for this reason the excursion had a prominent geographical as well as geological character of interest to a large circle of students.

With the recognition, a quarter of a century ago, of the importance of subaerial base-leveling and the mark of its approximate completion in the peneplain, southern New England came to be looked upon as a type illustration. The date of the completion of the peneplain was regarded as late Mesozoic, the time of first uplift as early in the Tertiary, and the dissection as due to Tertiary erosion.

In December, 1912, Professor Barrell gave two papers at the New Haven meeting of the Geological Society of America, which, in a number of the conclusions, were radically opposed to this older interpretation. Although the importance of peneplanation in continental interiors was not questioned, nor the quantitative dominance of river erosion even on the eastern side of the Appalachians, it was concluded from the evidence remaining that the so-called peneplain of southern New England was originally stairlike or terraced in its character, facing the sea, and bore the marks of ultimate control by marine denudation. These terraces are now dismantled by erosion except in regions favored by the presence of broadly developed resistant rock-structures.

Names have been given to these terraces, and the route of the excursion crossed the following in the region where they are recognizably preserved: Cornwall terrace, elevation 1680 to 1720 feet; Goshen terrace, elevation 1340 to 1380 feet; Litchfield terrace, elevation 1100 to 1140 feet; Prospect terrace, elevation 880 to 920 feet. Lower and younger base-levels were shown along the line of the excursion by the stream-eroded valley forms, though also represented by marine terraces farther toward the sea. The marine terraces and river valleys which were traversed are all regarded as younger than the Miocene.[1]

The evidences on which this new interpretation is based are drawn from a broad study of the country between Vermont and Virginia and were presented by Professor Barrell in an illustrated lecture Friday evening, October 16, in Peabody Museum, Yale University.

The topographic maps of the U. S. Geological Survey which cover the region traversed are the Waterbury, New Milford, Winsted, and Cornwall sheets, all of Connecticut. In order that the significant features may be more readily perceived it is desirable to emphasize certain contours of these maps with colored crayons or drawing inks, as follows: Waterbury sheet, 800, 1000, 1200 feet; New Milford sheet, 1000, 1200, 1400 feet; Winsted sheet, 1200, 1400, 1600 feet; Cornwall sheet, 1400, 1600, 1800 feet. Each of these contours, at least on the same map, should have a separate color.

[1] For an abstract presenting this view of marine terraces see *Bull. Geol. Soc. Amer.*, Vol. 24, 1913, pp. 688-691, and the discussion on the pages following.

Stops for observation and discussion were made at strategic points every few miles. From the first point, elevation 590 feet, the subaerial valley forms below the Prospect terrace were noted. Here, as is generally true in any one view, nothing more than one older, outer, and higher, one younger, inner, and lower valley slope is demonstrable; yet a broader study of the region suggests that the valleys had been eroded here with respect to older base-levels of about 620 and 520 feet, and several younger and lower base-levels. It emphasized the need in physiographic study of an analytical investigation of a region from the map as a necessary accompaniment of local field observation.

The next stop was at an elevation of 900 feet on the top of a remnant of the Prospect terrace. Here again, as in most cases, nothing conclusive is shown by observation at one point in regard to the mode of origin of the Prospect terrace or its relation to the higher levels. A broader study suggests, however, that it was made by a marine planation of moderate amount resulting from a submergence following a long period of subaerial erosion.

The three higher terraces, on the other hand, as shown on the route through Morris, Litchfield, and West Goshen, show very definitely plains cut nearly horizontally, but at successively higher levels. From the viewpoint of each lower plain, the front of the next higher terrace is seen to trend as a dissected and sloping wall across the landscape. The surface of each higher terrace has suffered also to a greater extent than those lower from subsequent subaerial denudation.

The consequences following from this interpretation of the Piedmont plateau are most important, as it changes the conception of its mode of origin and of the Tertiary history of the Atlantic slopes. It gives a suggestion of the geological rapidity of completion of an erosion cycle in a region near the sea and of a sequence of diastrophic rhythms there recorded. A similar control of the topography of the seaward slopes should be applied as a working hypothesis as a competitor of the older explanation for other portions of the Atlantic shores.

THE SAND HILLS OF NEBRASKA[1]

About 20,000 square miles in central and western Nebraska, with smaller areas in neighboring states (mostly between 2000 and 3000 feet above sea-level) are characterized by sand-hills unlike those of any other part of the world. Professor Pool has now written a comprehensive account of this region. His monograph discusses the history of exploration of the area, its location and extent, geology and soils, topography and drainage, climate, effects of fire, soil moisture and texture, and plant "formations" and associations (this topic covering nearly 100 pages), and closes with a bibliography and thirty excellent half-tones.

The region is underlaid by Tertiary sandstones, the weathering of which has produced a soil consisting almost wholly of quartz sand on the uplands, with

[1] A Study of the Vegetation of the Sand-hills of Nebraska. By Raymond J. Pool. Map, ills. *Geol. & Nat. Hist. Surv. of Minnesota Botanical Studies*, Vol. 4, Part 3, pp. 189–312. Univ. of Minnesota, Minneapolis, 1914. 9½ x 6½.

some admixture of silt in the hollows. No chemical analyses of the soils are given, but determinations of humus and nitrogen for a few samples are quoted from another paper.

The topography is irregularly undulating, with a local relief of 100 feet or more in many places, and characterized by innumerable "choppy" hills and basins, some of the latter occupied by lakes, ponds, or marshes. Small streams are scarce, but there are a few rivers which have cut canyon-like valleys in the sandstone. A very characteristic topographic feature is the "blow-out," formed wherever breaks in the carpet of vegetation caused by fire or over-grazing allow the wind to scoop out hollows in the sand, which may become 100 feet deep and 600 feet wide before the vegetation regains a foothold. Outside of the blow-outs there is no noticeable movement of the sand.

The region is semi-arid, the average annual precipitation being about twenty inches. The author says nothing of the seasonal distribution of rainfall, but Plate 2 in *U. S. Geol. Survey Water Supply Paper 234*, 1909, shows that this sand-hill country is in or near the only part of the United States which has over 80 per cent. of its rainfall in the six months April–September; from which it is natural to conclude that there is some correlation between the extremely sandy soil and the excess of summer rain, as has been pointed out by the reviewer for some parts of the southeastern coastal plain.

The country is essentially treeless, except along streams. The vegetation is divided into about two dozen "associations," and the plants of each are listed, mostly in alphabetical order, instead of in order of abundance, which would have been much more significant. The most extensive type of vegetation is the "bunch-grass association," and the most abundant plant in it is the common grass *Andropogon scoparius* (called broom-sedge in the East). The vegetative covering, unlike that of dunes and deserts, is in most places dense enough for fire to run through it at intervals; and this monograph is one of the very few ecological papers that recognizes the importance of fire as an environmental factor, instead of treating it as a mere accident and dismissing it in a few words. The author says that many of the fires are started by lightning, a fact which some ecologists who have studied prairie vegetation farther east seem loath to admit.

Although little is said about the economic features, it is evident from the illustrations that the area is very sparsely settled. (It had about two inhabitants to the square mile in 1910, and sod-houses are the most characteristic type of architecture.)

The bibliography, exclusive of cross-references, contains seventy-three titles, some relating to the area studied and some merely of general interest. It would have been appropriate to add the "Reconnoissance Survey of Western Nebraska," by T. D. Rice and party, in *Field Operations of the U. S. Bureau of Soils for 1911* (pp. 1875-1989, Plate 17), the separates of which were issued in June, 1913.

ROLAND M. HARPER.

GEOGRAPHICAL RECORD

THE AMERICAN GEOGRAPHICAL SOCIETY

Meeting of the Society. The first meeting of the Society, in the coming lecture season, will be held at the Engineering Societies' Hall, No. 29 West 39th Street, on Tuesday evening, November 23, 1915, at 8.30 o'clock, when Henry R. Rose, D.D., will lecture upon "The Countries at War." Lantern views will be shown.

NORTH AMERICA.

Forest Reservation in the White Mountains. June last saw the termination of an important national experiment: the fulfillment of the Weekes Act of 1911 for the government acquisition of forest land at the headwaters of navigable streams ("New England's Federal Forest Reserve," by Philip W. Ayres, in *American Forestry*, July, 1915). The entire appropriation was devoted to the hitherto neglected Appalachians. The land acquired comprises

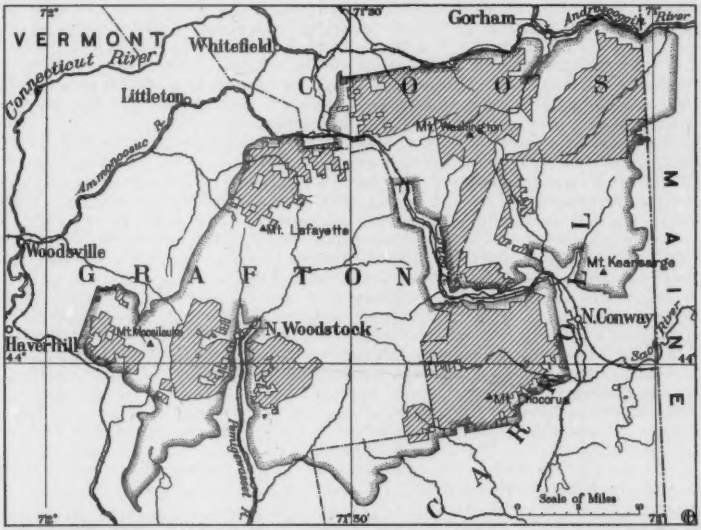

FIG. 1—Map of the White Mountain National Forest showing the present purchase area in New Hampshire and Maine. Scale, 1:870,000. Redrawn, by permission, from a map in *American Forestry* for July, 1915.
Present purchase area indicated by stippling; tracts already purchased or approved for purchase, by ruling.

about 1,250,000 acres, of which a little more than one-fifth pertains to the White Mountains area. The character of the forest in the latter region is conclusive evidence of the need for government control. Private companies cannot manipulate the timber crop profitably without leaving the land impoverished; and an enterprise so far-reaching and costly is beyond the power of such a state as New Hampshire with its upland farms and fringe of small manufactories supporting a population of less than 450,000 souls. In its purchase of the

Crawford Notch, the state has indeed made a valuable contribution to the public welfare. In the White Mountains Reservation much of the forest has been cut over. On the steep slopes, erosion has followed with dire results and in many places fire has swept disastrously over the debris-littered surface or keen winter winds have blasted the remaining scattered and ill-protected trees. Thus, while the northern slopes of the Presidential Range have been saved by their heavier precipitation, the drier eastern side now shows a large proportion of young deciduous growth, economically useless. Two centuries must elapse before the valuable pine and spruce will arrive at maturity. Besides conservation of the forest cover, government operations will extend the useful work begun by the Appalachian Mountain Club and render more of this beautiful country accessible to the tourist; already new paths have been opened in that part of the Carter-Moriah Range in the valley of the Wild River. The present reservation must, however, be increased to obtain maximum results. The headwaters of the most important rivers are not yet under complete control. In respect of the Androscoggin and the Kennebec, well provided with lake storage, this matter of control for purposes of industry and navigation is not so important; but the case is different with the Connecticut, a river upon which the well-being of some 2,000,000 people is dependent.

The Mohave Desert. Dr. Ellsworth Huntington spent most of April, May and June in the Mohave Desert with various members of the staff of the Desert Botanical Laboratory at Tucson. At the request of the Society, he has written the following brief summary of results:

"Our purpose is to make a study of the relation of climatic variations to organic evolution. The materials for such a study are extraordinarily favorable. The three rivers which once drained to Death Valley, namely, the Mohave, Owens, and Amargosa, have all had lakes along their courses during the recent past. These lakes, especially those of the Owens, Searles, Panamint, Death Valley series present a truly astonishing number of strands. In addition to these evidences of climatic instability, there are a large number of lacustrine deposits which are exposed to view in a way that is probably nowhere else paralleled. From all the various lines of evidence it seems probable that we can frame a climatic scale from late Tertiary times through the glacial period to the present time with almost no breaks. Our purpose is to carry this study farther next year by making an intensive study of Death Valley.

"To the usual types of physiographic and stratigraphic evidence as to changes of climate, geologists have recently added a new and most convincing type in the form of chemical studies of the length of time required for the concentration of the salts in some of our western lakes. On the basis of their evidence, an attempt was made to see whether the old strands of such lakes as Owens, Mono, Pyramid and others agree with the fluctuations of the curve of growth of the sequoias. The results show, not only that there is a surprising degree of agreement, but that from the character of the strands it is possible to gain an idea as to the nature of one climatic epoch compared with another. For example, the moist period of the fourteenth century shows evidence of having been particularly windy."

Continued Destruction by Forest Fires. The Forest Service estimates that forest fires in 1914 burned over an area of approximately 6,000,000 acres with a total loss of at least $9,500,000. The ravages of fire have been continued during the past season and large areas were aflame in Washington and Montana in August and September. Many of the fires were in view along the Northern Pacific Railway. The wide-spread smoke made it impossible, late in August and early in September, to see Mts. Hood, Adams and St. Helens from Portland or Mt. Rainier from Puget Sound.

Agriculture in Alaska. The reports of the agricultural experiment stations of Alaska (Report of the Alaska Agricultural Experiment Stations, U. S. Dept. of Agriculture, 1914) have a peculiar interest from the pioneer nature of their work in this region which approaches the limits of human

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habitability. The delicate adjustments of human economy, the narrow border between success and failure stand out with singular clearness. This is more particularly the case at the interior stations of the Yukon-Tanana basin, Fairbanks and Rampart, which differ greatly in climate and accessibility from the coast stations of Sitka and Kodiak Island. In a region with so short a growing season, weather becomes the factor of supreme importance. As yet the weather of interior Alaska is little understood. According to the superintendent of the Fairbanks station the years under observation have shown no two seasons reasonably alike. Yet results continue to justify optimistic hopes for the future of Alaskan agriculture (*cf.* "Alaska Agricultural Possibilities," *Bull. Amer. Geogr. Soc.*, Vol. 42, 1910, pp. 888-903). In a "normal" year, barley, oats and wheat always mature and hardy vegetables flourish; turnips can be grown within 100 miles north of the Arctic Circle. The year 1914 appears to have been a crucial test; it was particularly unfavorable. Early in the season, drought suspended growth for three weeks. Disastrously heavy rains followed in the latter part of June and all July. The Fairbanks station reports 0.93 inch of rain in less than an hour on one day in June; for the month of July the total was 4.63 inches as compared with 2.24 inches for the same period of the previous year. The prevalent cloudiness—where direct sunlight is of paramount value—was even more harmful: July had only one entirely clear day.

Under such climatic conditions the maintenance of a favorable balance demands unusual care in farming economy; study of soils and crops becomes imperative. Where the ground is frozen for seven months in the year such questions as those of slope and aspect are vital. On the southern slopes at the Fairbanks station the ground, contrary to general impression, thaws down to bedrock and with proper drainage makes an excellent seed-bed. Again, surface is important in relation to inversion of temperature. At Rampart, potatoes grown on the higher ground escape the early frosts of the lowlands.

This part of Alaska is in great need of a suitable species of farm animal. Cattle are not adapted to the climate; the cost of supporting them through the winter is practically prohibitive. A few dairy cows have been kept and the price of milk has justified their maintenance but all meat comes from outside, chiefly in the form of cold storage products, occasionally on the hoof. The introduction of a cross between the yak and ordinary cattle is advocated and supported by information received from the director of the agricultural station of Irkutsk, Siberia. He reports that such a cross is common in Mongolia, where it affords a strong draft, as well as a beef and milk animal.

Even more important is the experimental work in the production of plant breeds. Experiments extending over several years have shown that natural selection is too slow an agent to be of practical significance. Seven years have failed to produce a hardy winter wheat, even with the Kharkof variety. Foreign varieties of plants have not always proved adaptable, though there are notable exceptions, as the Siberian alfalfas and the recently tried spring wheat from Irkutsk that successfully withstood the severe conditions of the last year in Rampart.

Fish Supply from Lesser Slave Lake. In the course of the construction of the Edmonton, Dunvegan and British Columbia Ry., extending northwest from the Grand Trunk Pacific, the great fish resources, especially white fish, of Lesser Slave Lake (south shore about 55°20′ N.) have been made available for the general market. White fish is now being shipped from the lake in refrigerator car lots to Chicago. This is the latest illustration of the fact that Canadian enterprise is bringing within reach important resources that are still outside the areas of considerable settlement.

Cozumel, "The Isle of Swallows." The paradoxical effects of insularity are well illustrated by the history of Cozumel, the easternmost point of Mexico, twelve miles from the mainland of the Yucatan peninsula. In pre-Spanish times it flourished as a great religious center. Thousands of Mayas flocked to its sacred shrines. So it was when discovered by Hernando Cortes, who made it his first landing on the way to the conquest of Mexico. Cortes

ordered the destruction of the sacred altars, and his initial act was soon followed by absolute prohibition of the pilgrimages that deprived the Spaniard of so much useful labor. Consequently the island fell into a state of complete abandonment. An American traveler of the early nineteenth century found it entirely covered with scrub timber, save for two small clearings, the one made by a political refugee and pirate, the other by a squatter who had attempted to grow cotton. In 1848 the island again received a permanent population. The Mexican government found it a convenient place for the settlement of political revolutionaries. These half-voluntary immigrants throve and now number some 1,400 souls. Maintaining an easy hand-to-mouth existence the farmer-fisher population is practically independent and self-contained. Regular communication with the mainland is only made twice a month. The island also includes a little colony of the shy and cleanly Mayas. (Cozumel: A Mexican Island, *Bull. Pan Amer. Union*, August, 1915, pp. 221-236.)

SOUTH AMERICA

The Field and Forest Resources of British Guiana. This is a special article* on the actual and potential economic resources of the three great natural regions into which the colony is divided. The alluvial coastal belt is largely dependent on the sugar industry, accounting for 75 per cent. of the exports, which, showing many vicissitudes in common with the West Indies, are restricted in the main by scarcity of labor. The labor market relies almost entirely on the immigration of the East Indian coolie. This race is now estimated to constitute over 40 per cent. of the total population. The last few years have seen a notable change in the exportation movement of the sugar products. In the nineties, two-thirds went to the United States, nearly one-third to the United Kingdom, and the very small remainder to Canada. In the years 1912-1913 Canada claimed 70 per cent. of the exportations, the United Kingdom 20 per cent. and the United States 8 per cent.

The broad interior belt of lower hills and plains has a vast source of wealth in its forests at present only exploited in the most accessible parts, that is, in the areas provided with unimpeded stream navigation; for this is the only method by which the timber of higher specific gravity can be transported. The remote and practically unknown savannahs of the interior are great potential cattle pastures.

Chilean Meteorology. Under the direction of Dr. Walter Knoche, the reorganized "Instituto Central Meteorológico y Geofísico de Chile" is doing excellent work. The *Anuario* for 1913, Pt. 1, contains in full the thrice daily means for 30 stations of the first, second and third orders. *Publicación No. 14*, 1915, gives the rainfalls for 1913. The number of rainfall stations increased 75 over that in the preceding year. It is worth noting that Easter Island appears in the list of 7 stations for which hourly rainfalls are given. A diagram shows graphically the amounts of rainfall which fell in 1913 at a number of selected stations. Evangelistas (52°24′ S. and 75°6′ W.) leads, with about 3500 mms.

R. DEC. WARD.

Commerce of Colombia and Venezuela. Trade diversion through the war has brought the Caribbean countries of South America into closer touch with the United States. Thus, in the case of Venezuela, Ciudad Bolivar, with a former large export trade to Germany and business chiefly in German hands, with outlet via Trinidad, has been compelled to find a new route and a new market over the llanos to La Guaira and thence to the United States (*Board of Trade Journal*, London, July 22nd, 1915). The proportionate volume of total trade between the United States and Colombia has made a large gain: in 1913 the States absorbed 54 per cent. of the exports and 38 per cent. of the imports; in 1914, 73 per cent. of the exports and 43.5 per cent. of the imports. This increasing interest in Colombian commerce might well find further ex-

* By J. B. Harrison and C. K. Bancroft, in *Bull. Imper. Inst.*, Vol. 13, 1915, No. 2, pp. 203-233.

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pression in the introduction of productive capital into the country and in the promotion of means of communication, the two features whose lack is mainly responsible for Colombia's insignificant position in the commercial world, her total commerce per capita being only $7.50 (Colombia, *Supplement to Commerce Reports,* Aug. 20, 1915). Perhaps the brightest prospect of Colombian trade lies in the revival and development of her pastoral industry, which should find encouragement in the possibilities of a new market in the United States. Recently a trial consignment of 100 refrigerated beeves was dispatched thither, and it is said that arrangements can be made for a bi-annual shipment of 10,000 (*Bull. Pan Amer. Union,* May, 1915.)

AFRICA

New Volcano in the Lake Kivu Region. The chief center of volcanic activity in Africa, in recent times, has been among the volcanoes of the Kirunga group, north of Lake Kivu, on the boundary between German East Africa and the Belgian Congo. Towards the end of December, 1912, Mr. Cuthbert Christy, when 200 miles northwest of this district, heard for several days a sound like the firing of heavy guns.[1] The mystery was explained when he returned to England, in a letter received from Sir Alfred Sharpe, who had been in the district at the same time. He wrote in part:

"We first saw the glow of the eruption of Kivu on December 9, 1912. We were then about 70 miles from the volcanoes. The eruption was the outbreak of a new volcano out of the comparatively level ground at the northwest corner of Kivu, 4 or 5 miles from the lake. I believe it began on December 7 or 8. We reached Bobandana station, 7 miles from the new volcano, on December 19. The cone thrown up was then 600 feet high. The crater was 500 to 600 yards in diameter. The lava ran in two broad rivers into Kabino Inlet, the waters of which were boiling. All the northwest corner of Kivu was nearly boiling, all fish killed, a good many people also killed, and canoes lost. The eruption reached its maximum activity about Christmas Eve. By January 15 there was nothing but smoke. The noise was heard at Beni, 140 miles north, and at Bukoba, 190 miles east. Walikale, 150 miles west, was covered with ash, the prevailing wind being east. The new volcano was christened 'Katarusi' by the local Belgian Chief of Post, Captain Henri, that being the name of a village close at hand."

Railroads of German Southwest Africa and the Union of South Africa Connected. The Union of South Africa has built a line to connect its railroad system with the railroads of German Southwest Africa. When the war began a distance of over 300 miles separated the two systems. The British decided, for military purposes, to build a new line from Prieska along the south bank of the Orange to Upington, where the river was crossed. From Upington the line runs northwest to Nakob and thence west to Kalkfontein. The length of the line is 314 miles, and from the time of beginning the survey until the railroad was completed only ten months and four days elapsed. The road will doubtless be of much importance in the future as it brings the two regions into close connection and greatly reduces the distance between German Southwest Africa and all places in South Africa east of and including Kimberley.

Island Geography as Illustrated by the Canary Islands. The present situation in the Canaries illustrates one of the fundamental aspects in the geography of small islands: their peculiar susceptibility to fluctuations of prosperity. Dependent on their normally favorable location as a point of call for coal and provisions, the Canary Islands have at once responded to the partial isolation induced by the war (*Diplomatic and Consular Reports,* Annual Series, No. 5453, Aug., 1915). Coal has only been obtained irregularly and

[1] The Ituri River, Forest and Pygmies. By Cuthbert Christy. *Geogr. Journ.*, Vol. 46, 1915. No. 3, p. 204.

at increased cost. The amount supplied to steamers was, in 1914, little more than half that so used in 1912. Since the commencement of the war the cost of coal freight has ranged between 7s. and 28s. per ton. With the decline in the shipping movement the usual steady demand for labor has ceased. Still worse is the effect on the fruit-growing industry. An important market removed, transportation impeded, exchange difficult, with the consequent glut of perishable cargo, have resulted in a disastrous reduction of an important source of income. Farmers have felt this more particularly because their general tendency is to invest their savings in more land to put under cultivation and not to keep any reserve funds. Farms are beginning to show neglect and it is to be feared that far-reaching injury may be done them if the present situation continues much longer. Further loss has been sustained in the cessation of the tourist traffic and of the embroidery industry. Lack of raw material, which is chiefly obtained from Hamburg, has suspended the latter.

ASIA

Barometric Altitudes in Mesopotamia and Asia Minor. In the July number of *Petermanns Mitteilungen* (pp. 267-270) the late V. Petzold publishes a list of nearly 300 barometric altitudes measured by E. Banse on two trips in the Near East, the one from April 22 to May 27, 1907, and the other from February 24 to May 7, 1908. The first trip led from Aleppo to Diarbekr, thence via Malatia to Sivas and from there via Amasia toward the Black Sea. The second, more extended trip, began at Damascus and led via Palmyra to the Euphrates at Deir ez Zor (35½° N.), down the Euphrates to Babylon, across to the Tigris at Bagdad, up the Tigris to Mosul and then across the northern edge of the Mesopotamian plain via Mardin, Urfa and Aintab to Adana and Tarsus on the Mediterranean littoral. Banse's observed values have been subjected to a careful analysis by Petzold and probably represent as correct values as can be expected under the circumstances. The elevations along the Euphrates are especially valuable, as they represent the first connected series we possess for this stretch of the river.

AUSTRALASIA AND OCEANIA

Rainfall of Queensland. The activities of the Australian Commonwealth Bureau of Meteorology are extraordinary. A number of recent publications have been noticed in the *Bulletin*, and we now have a quarto volume (284 pp.) on the "Results of Rainfall Observations in Queensland" (1914). This is the third of a series, which already includes volumes on New South Wales and Victoria. The present publication contains tabulations of all available annual totals, and number of days of rainfall, up to the end of 1913, for over 1,000 stations. Many of the records go back to 1880 and earlier. The maps are very complete. There are 27 small annual rainfall maps (1887-1913); a mean annual rainfall map large enough for wall use; normal monthly rainfall maps; charts showing the number of recorded remarkable wind, thunder and hail storms; an *interim* rainfall map for Papua, and a frost map of Australia. Many diagrams are also included. The volume was prepared under the direction of Mr. H. A. Hunt, Commonwealth Meteorologist.

R. DEC. WARD.

EUROPE

Projected Opening of the Upper Danube for Navigation. The head of steam navigation on the Danube has heretofore been at Ratisbon, Bavaria. Only light boats of 20 to 25 tons draft have been able to ascend to Ulm. It is now proposed to make Ulm the head of navigation. The chief obstacle is a rock ledge about three miles below the city. The Jurassic rocks, between which on the north and the Pliocene Alpine Foreland on the south the Danube forms the boundary, here cross, in a spur, from the left to the right bank. A plan worked out by the city engineers calls for blasting a

channel through this ledge at a cost of $5,000. All other obstacles can easily be done away with; a number of wooden bridges would have to be removed, embankments would have to be built at several places and the channel dragged for snags. With these obstructions set aside, Ulm will communicate freely by water with Vienna and Budapest and the Danube will be navigable clear across Bavaria. (*Petermanns Mitt.*, July, 1915, p. 259.)

Effects of the War on Geographical Interests. With the publication of its August number and the completion of its thirty-seventh volume the *Deutsche Rundschau für Geographie*, the leading Austrian geographical journal not an organ of a society, announces suspension of publication. The editor, Professor Hugo Hassinger, of Vienna, has been called to the colors. It is the intention to resume publication in a year.

The addition of the Austro-Italian Alps to the areas of military activity has led the Austrian authorities to forbid all tourist traffic in southern Tyrol and western Carinthia. The line south of which no traffic is allowed passes through the following points according to a map published in the *Mitt. des Deutschen & Österreich. Alpenvereins* for July 31, 1915: Feldkirch—Arlberg Pass—Brenner Pass—Upper Salzach Valley—Gastein—Radstädter Tauern Pass—Villach—Upper Drave Valley.

MATHEMATICAL GEOGRAPHY AND CARTOGRAPHY

The Errors of Precise Leveling. Mr. William Bowie, of the U. S. Coast and Geodetic Survey, addressed the Philosophical Society of Washington on March 13, 1915, on this topic, of which the following is an abstract:

Very accurate determinations of elevations above some adopted datum have been made possible by the great improvements of the wye level during the past half century. In 1912 the International Geodetic Association defined leveling of high precision as that which must have a probable accidental error not greater than 1 mm. per kilometer and a probable systematic error not greater than 0.2 mm. per kilometer. The effect of most of the errors of precise leveling can be eliminated by the method employed. There are, however, errors of refraction in leveling on steep slopes which depend upon the time of day and the weather conditions. It is concluded from an investigation carried on at the Coast and Geodetic Survey that, on an average, the afternoon running gives a greater difference in elevation between two points than a morning running. The difference is greater in cloudy than in sunshiny or clear weather. It is also greater during wind than in calm. The speaker was of the opinion that the runnings in the afternoon in wind and cloudy weather give results nearer the truth than in the forenoon in calm and in sunshiny weather. (*Journ. Wash. Acad. of Sci.*, Vol. 5, 1915, No. 15, p. 555.)

GENERAL

Geographisches Jahrbuch for 1914. The *Geographisches Jahrbuch* for 1914 has just appeared (Justus Perthes, Gotha, 1915). It differs from its counterpart in the field of critical geographical bibliography, the *Bibliographie annuelle des Annales de Géographie*, in that its unit of treatment is topical, the literature of each subdivision of geography for a given period of years being reviewed by a specialist, while the bibliography of the *Annales de Géographie* presents a summary of the literature of a given year, the unit of review being individual publications or series. These two bibliographies, the one systematic and the other chronological, therefore admirably supplement each other; through their combined use the geographer runs little risk of overlooking any essential publication in any phase of his wide field of work.

The present number contains the following surveys: Dynamic Geology, 1909-1912, by E. Tams (58 pp.); Physiography, 1910-1912, by A. Rühl (32 pp.); Regional Geology, 1911-1914, by F. Toula (114 pp.); Regional Geography of North America, 1908-1913, by E. Deckert (24 pp.); Regional Geogra-

phy of non-Russian Asia, 1908-1912, by O. Quelle (86 pp.); Regional Geography of Russian Asia, 1905-1914, by M. Friederichsen (32 pp.). The summary of the literature on North America covers the field well on the whole, although it is more in the nature of an enumeration and stresses important publications less than do the other reviews. The usual systematic index enables the reader at a glance to determine the range of subjects treated and the volume in which the last review on a given subject was published. Authors' names are rather carelessly printed. A. H. Brooks appears thus and also without the final 's'; and F. V. Emerson is designated both thus and F. W. Emerson, with the result that he appears as two distinct persons in the index.

PERSONAL

Professor Otto Baschin of Berlin has received from the Royal Prussian Academy of Sciences the silver Leibnitz Medal in recognition of his services to geography. He is best known as the editor of "Bibliotheca Geographica," one of the leading geographical bibliographies, published by the Berlin Geographical Society since 1881, seventeen volumes of which have thus far appeared. His studies on the origin of dunes and his activity in the promotion of balloon ascents for meteorological purposes have also been widely recognized.

Professor Arnaldo Faustini of the Università Popolare of Rome, whose visit to this country was noted in the March *Bulletin*, spoke in French before the Journal Club of the Department of Geology of Columbia University in May last on the glaciation of the American Arctic Archipelago. Professor Faustini has presented to the Society a comprehensive collection of his writings on Polar geography, among which may be mentioned his paper on an unpublished chart of South Georgia; a paper on Polar lakes, designed as a contribution to the limnology of the Arctic,—both published in the *Rivista Geografica Italiana*, in 1906 and 1910 respectively—; and his book "Gli Eschimesi," the only systematic treatise on the Eskimo in Italian.

A. Gibb Maitland, Government Geologist and Director of the Geological Survey, Western Australia, has been appointed President of the Royal Society of Western Australia for the session 1915-1916. (*Nature*, No. 2393, Sept. 9, 1915.)

OBITUARY

E. GELCICH, the Austrian scientist, died in Vienna in July in his sixty-first year. His publications deal mainly with navigation, mathematical geography and cartography. He is best known to geography by his joint authorship, with F. Sauter and P. Dinse, of a helpful primer on cartography (reviewed in the *Bulletin*, Vol. 41, 1909, p. 524), which has recently been rewritten and expanded into two volumes by M. Groll (reviewed in the *Bulletin*, Vol. 45, 1913, p. 542).

JULIUS RITTER VON PAYER, the distinguished Polar explorer, died in Vienna at the age of 73 years. He was joint commander with Lieutenant Weyprecht of the second Polar expedition fitted out by Count Wilczek in 1872 which, on August 13, 1873, discovered Franz Josef Land. Payer at that time made a sledge journey to Cape Fligely, which was the highest latitude attained in the Old World till 1895, when Nansen reached 86°14'.

BARCLAY RAUNKIÆR, who made a reconnaissance journey in northeastern Arabia in 1911-1912, under the auspices of the Danish Royal Geographical Society, died in Copenhagen on July 15, aged 25 years. He sent a preliminary report on this journey in Arabia to the *Bulletin* (Vol. 44, 1912, pp. 657-660.) He was known also for his expedition to Central Tunis and as a writer on the geography of plants.

HERMANN SINGER died on June 14 at Friedenau near Berlin, aged 48 years. Trained as a journalist, he became editor of the widely known German periodical *Globus*, a position which he held till 1910, the year of its amalgamation with *Petermanns Mitteilungen*. Singer's writings refer mainly to Polar discovery and African geography.

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GEOGRAPHICAL LITERATURE AND MAPS

(INCLUDING ACCESSIONS TO THE LIBRARY)

BOOK REVIEWS AND NOTICES

(The size of books is given in inches to the nearest half inch.)

NORTH AMERICA

A Guide to the National Parks of America. Compiled and edited by Edward F. Allen. 286 pp. Maps, ills. McBride, Nast & Co., New York, 1915. $1. 6 x 4.

The book gives an excellent condensed statement of information needed by the tourist as to transportation in the parks, hotels, excursions, tours, stop-over privileges, etc., with the cost of each item and other practical suggestions, including the special interest of various features of our national playgrounds.

The Scandinavian Element in the United States. By Kendric C. Babcock. 223 pp. Index. *Univ. of Illinois Studies in the Social Sciences*, Vol. 3, 1914, No. 3. Urbana, Ill. $1.15. 10 x 6½.

The work gives the reader a sense of failure to make out any essentially Scandinavian element in the United States. This may be a mark of the book's success. Dr. Babcock finds the Scandinavian more "American" than any except the British racial components of our people. They do not constitute a distinct group among the people. Each family has its history, that goes back to the old land. Their thrift, love of land and labor and freedom, their knowledge of agriculture and their large families have made them prosper, just as they have made them desirable citizens; but prosperity is not of any one class, not distinctive. It is a fair question whether so formidable a work was necessary to reach a conclusion so simple. An interesting minor point established is the superiority of the thinly settled rural districts, as a school of politics for the foreigner, over the city. Where he almost exclusively settles the land he has perforce to organize its government. MARK JEFFERSON.

The Rocky Mountain Wonderland. By Enos A. Mills. xiii and 363 pp. Map, ills., index. Houghton Mifflin Co., Boston, 1915. $1.75. 8 x 5½.

Most of the book deals with nature and the author's experiences in the Rocky Mountains of Colorado. He says he has visited on foot every part of the state, in every season of the year, and has come into contact with the wild life of the heights in every kind of weather. He gives general directions for mountain climbing and writes of the bighorn sheep (which he considers the most daring acrobat of the animal world) and of his own adventures among snow-slides and in deep snows. He tells of the "return horses," trained to go home when set free by the rider. The grizzly bear, the beaver, how animals survive the winter snows, renewing the forest after it has been swept by fire, conservation of scenery, and the Rocky Mountain National Park are among his other topics. The book, written in charming style, radiates the freshness and greatness of the out-of-doors. W. G. BURROUGHS.

Triangulation in Alabama and Mississippi. By Walter F. Reynolds. 71 pp. Maps, index. *U. S. Coast and Geodetic Surv. Spec. Public No. 24.* 1915. 11½ x 9.

The scheme of triangulation extending from Calais, Maine, and following the Appalachian Mountains and the Gulf Coast to New Orleans, La., is commonly known as the Eastern Oblique Arc.

The field work on this arc was begun in 1833 and after many interruptions

was completed in 1898. This triangulation was done to determine the size and figure of the earth and to connect the various detached surveys along the Atlantic and Gulf coasts. The work is reported on in *Special Publication No. 7* of the Coast and Geodetic Survey. As this volume was published before the adoption of the United States standard datum, now called the North American datum, the positions given in it could not be held fixed. *Special Publication No. 24* gives the geographic positions on the North American datum of about 600 triangulation stations in Alabama, Mississippi and Louisiana. These positions include all the old stations of the Eastern Oblique Arc in these three states, together with those of the new stations that were established in 1909, 1910 and 1911. A description is also given of each station which was marked substantially.

The triangulation is conveniently divided, according to its accuracy, into three sections. That section north of the Dauphin Island base is of primary character and of a very high degree of accuracy. The section from Dauphin Island base westward to the line Deer Island 1–Ship Island 1855, while of primary character, has not the degree of accuracy of the first section owing to the necessarily contracted width of the scheme. The third section from Deer Island 1–Ship Island 1855 to New Orleans is of secondary character. Excluding the third section the probable error of an observed direction is $\pm$ 0.42″ and the average closing error of a triangle is 0.95″.

The lengths in the triangulation are fixed by the Atlanta, Dauphin Island and Magnolia bases. The length of the Atlanta base, carried through the triangulation, agreed with the length of the Dauphin Island base by one part in 2,700,000. The Dauphin Island base was the first base line measured with the Bache-Würdeman base apparatus. On the Atlanta base the same apparatus was used.

Included in the publication is an explanation of the North American datum and a list of the publications of the Coast and Geodetic Survey which give geographic positions on that datum throughout the United States.

The elevations of about 100 of the triangulation stations were determined by trigonometric leveling and are given in meters above mean sea level. The highest station, and probably the highest point in Alabama, is Cheehahaw, whose elevation above mean sea level is 735.4 meters (2413 feet).

H. G. Avers.

The Anthracite Coal Combination in the United States, with some account of the early development of the anthracite industry. By Eliot Jones. xiii and 261 pp. Maps, index. *Harvard Econ. Studies, Vol. 11.* Harvard University Press, Cambridge, 1914. $1.50. 9 x 6.

In the author's words "this book is a study of the combination movement in the anthracite coal industry. It presents an historical narrative of the beginnings and the growth of the industry; chronicles . . . the facts relating to the development of the combination and its control of the business; and describes the attempts of the government to dissolve the combination." The thesis shows thoroughness and mastery of the subject matter. It has been deservingly awarded the David A. Wells prize for the year 1913-14 at Harvard University.

The anthracite coal fields are located in detail and their resources carefully discussed. The early antagonism, as recently as 1812, toward the use of anthracite coal is especially striking in view of the tremendous consumption of the product today. The discussion of the development of canals in eastern Pennsylvania in connection with the exploitation of the coal deposits, and their subsequent absorption by the railroads, furnishes good material for the student who desires a well-worked-out but brief treatise on the subject. A map of all the coal fields of Pennsylvania, one of the anthracite fields, and graphs covering various phases of coal production and prices illuminate the text. A few statistical tables from which the graphs were constructed, copies of letters written by railroad officials in connection with investigations by the Interstate Commerce Commission, and an exhaustive bibliography of 207 titles are appended. The index is very complete. Eugene Van Cleef.

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Days and Ways in Old Boston. Edited by William S. Rossiter. 144 pp. Ills. R. H. Sterns & Co., Boston, 1915. 50 cents. 9 x 6½.

This booklet, originally intended as an advertisement for an outfitting firm, although metamorphosed into a brochure on Boston of the olden time, still serves the purpose for which it was first projected. The work is a collection of papers on special topics concerning Boston, prepared by writers of more or less note. Thus the editor of the little book contributes a chapter on Boston in 1847; Thomas Wentworth Higginson writes of other ways and days in Boston; an anonymous lady gives her recollections of olden Boston; the history of the Boston water-front is written by Frank H. Forbes; the daughter of Julia Ward Howe pleasantly describes her mother's old rosewood desk; the well-known editor of the *Boston Herald* adds a few lines on advertising in Boston newspapers since 1847. The chapter on Boston as a shopping city features only the business firm which publishes the book. The paper on Boston banks in their relation to national development, based on information supplied by Francis R. Hart, vice-chairman of the Board of Directors of the Old Colony Trust Co., brings the volume to a close. D. H. B.

In the Old West. As it was in the days of Kit Carson and the "Mountain Men." By George F. Ruxton. Edited by Horace Kephart. 345 pp. (Series: Outing Adventure Library). Outing Publishing Co., New York, 1915. $1. 7½ x 5.

A readable narrative, partly romance but largely an arrangement of actual experiences around a central theme, which gives the life of the trapper in the area between the Great Plains and the Pacific from 1830 to 1840. The story centers around one La Bonté who, forced to flee from Mississippi, goes to St. Louis, fits out as a trapper and joins a company of adventurers. Most of the book tells of the adventures of La Bonté and his boon companion, Killbuck, in strife with the Indians. A trip to the coast along the Oregon trail, a visit to the missions of California, a mêlée at a Mexican fandango and a chapter on the Mormons are woven into the tale. ROBERT M. BROWN.

The Salton Sea. A study of the geography, the geology, the floristics, and the ecology of a desert basin. By D. T. MacDougal and collaborators. 182 pp. Maps, ills. *Carnegie Inst. Publication No. 193.* Washington, D. C., 1914. $5. 12 x 9½.

The main topic is the ecology and chemistry of the Salton Sink. The first sixth of the book deals rather with aspects of earth-science. The treatment is technical. We do not learn whether the Salton Sea was, or is now, drinkable, but that it contained, when the Colorado stopped flowing into it, 300 parts solid in 100,000 parts, the ocean having 3,518, Salt River 101 and the Colorado 69. Salt River is perfectly drinkable, though distinctly salt. Salton Sea had three times as much solids at first and nine times by 1913. In an incidental way we learn that there were Colorado River fish in the Salton Sea at first, but they did not multiply. Carp were introduced and did multiply, and many aquatic birds came to feed on them. We do not learn the effect of the increasing salinity on the fish.

The Sea has been falling 5 feet a year, leaving *semiannual* strands. The evaporation from small pans is given at 6 or 7 feet a year. There is no comment on the disagreement nor reference to Bigelow's very interesting discovery that the Sea is covered with a layer of water-vapor, which hinders evaporation. The book has no index.

E. E. Free writes of geology and soils, including an account of the history of the basin and Sea. He regards as "unproven" the usual explanation of the origin of the sink: that the Colorado pushed its delta across the head of the Gulf of California, whereupon the sea-water evaporated from the headward part and left the basin. The original "Blake Sea" was fresh, the proof being abundance of fossil creatures that live only in fresh or brackish water, tufa deposits like those of the present Salton Sea, and the absence of such salt deposits as the ocean must necessarily leave behind it. The shores and floor

of the sink consist, not of marine deposits, but of subaërial desert wash. This was doubtless formed above sea-level. It is possible that the basin sank gradually below sea-level contemporaneously with the building of the delta across the Gulf trough, so that the ocean never got into the upper portion of the valley. Probably the river did not build its delta across while the region was above the sea, for it has a habit of switching on its delta and had it done so before the sinking it would have broken the dam of the detrital delta and washed it away.

The Blake Sea did not last long, to judge from its shore-lines. The much smaller Salton Sea will not last a score of years, and the irruption of Colorado River water is a normal event in the history of a river swinging on its conic delta. It occurred in 1905 because conditions were then ready at the river mouth. Perhaps the Imperial Valley irrigation works had less to do with it than has been supposed. Other floods, of greater or less extent have broken into the basin in 1828, '40, '49, '52, '59, '62, and '91, and the same thing has been happening for perhaps 1,000 years. MARK JEFFERSON.

Alaskan Glacier Studies of the National Geographic Society in the Yakutat Bay, Prince William Sound and Lower Copper River Regions. By Ralph Stockman Tarr and Lawrence Martin. xxvii and 498 pp. Maps, ills., index. National Geographic Society, Washington, D. C., 1914. 10½ x 8.

The field work upon which these studies are based was carried out in the summer seasons of 1909, 1910, 1911 and 1913, with funds furnished largely by the National Geographic Society. Popular and technical reports have both been published at intervals during the progress of the work, but the present volume brings all together in easily accessible form together with considerable new matter. Before the volume was completed, the much lamented death of Professor Tarr occurred, and the last eleven chapters, which deal with the glaciers of Prince William Sound and the Lower Copper River, have been written by the junior author independently.

For such comprehensive studies of a great scenic area open to tourists in some sections, and likely to be increasingly so in others in the near future, it must be admitted that the dress of the volume leaves something to be desired. It is a great pity that the magnificent photograph of Mount Fairweather (15,330 ft. high), which is made the frontispiece, could not have been reproduced by some more satisfactory process than the half-tone plate.

As regards the scientific work, it should be said in general that this has added materially to our knowledge of the characteristics of existing glaciers of the mountain type where they are more adequately nourished than elsewhere upon the globe. Nowhere else is so wide a range in type represented, and it must be a matter of regret that a new classification should be offered which requires the separation of a continuous mass of ice into its component parts and the ascribing to each, in some instances, of a separate type name. Of perhaps the greatest interest in connection with these investigations are the conclusions reached concerning the relation of sudden advances in the glacier fronts and the avalanching of snow by earthquakes within the high areas of alimentation. By noting the time separating the shocks from the times of advance of glaciers of different lengths, it was shown that the delay of the advance at the front is directly proportional to the length of the glacier.

By full use of data derived from earlier expeditions, conclusions of great value have been drawn concerning those advances and recessions of the glacier fronts which are to be ascribed to climatic changes. Detailed surveys of many small areas, generally near the front of the Alaskan glaciers, were made by the surveyors attached to the expeditions, and the results are presented in a series of small special maps, which are included with the general map of Alaska in a pocket at the end of the volume.

The book will be read with interest by many who class themselves as "general readers;" and the glacialist will find it indispensable as a summary of what has been accomplished in a study of the glaciers of the Alaskan field. Though they may serve the general reader, the views of the capitol at Wash-

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ington and of New York "skyscrapers" which are superimposed upon some of the finest pictures in order to supply a scale, will be deemed by the glacialists to have seriously marred the views on which they appear.

WILLIAM HERBERT HOBBS.

History of Canadian Wealth. By Gustavus Myers. Vol. 1: 337 pp. C. H. Kerr & Co., Chicago, 1914. $1.50. 7½ x 5½.

Furs, from the days of the earliest explorers to the present, have figured as one of the largest influences in the development of Canada. Nine chapters of the seventeen are given to a discussion of furs and the formation of the Hudson Bay Company. The exploitations of the latter, its methods of doing business, its development into a sort of department store for the wilderness, its tremendous profits and the final passing of its sovereignty are all thoroughly treated. The remainder of the book presents the story of the railroad development of Canada as a factor of the unfolding or uncovering of the vast natural resources. The writer has spared no effort to trace evidence back to original sources for verification and expansion. EUGENE VAN CLEEF.

British Columbia. By Ford Fairford. With an introduction by the Hon. J. H. Turner. xiii and 137 pp. Map, ills., index. Pitman & Sons, New York, 1914. 75 cents. 7½ x 5.

This little volume, written by one who for many years has been in close touch with the economic and social life of British Columbia, gives concise and definite information of the natural resources of the province, of what already has been done toward their development, and of the possibilities of future expansion. There are also chapters on law, revenue, expenditure and taxation; social conditions; climate; and labor, wages and the cost of living. The writer has unbounded faith in the future of the province which he thinks will be, by 1950, "a densely populated and prosperous country."

AVARD L. BISHOP.

The Story of Mexico. Complete—Authoritative—Up-to-Date. Giving a comprehensive history of this romantic and beautiful land from the days of Montezuma and the Empire of the Aztecs to the present time. By Charles Morris. 338 pp. Map, ills. J. C. Winston Co., Philadelphia, 1914. $1.20. 9 x 6½.

A popular compilation from recent works, magazine and newspaper articles concerning Mexico. The introduction contains some account of the oft-told ethnology of Mexico. Then follow chapters on the geography and geology, the condition and modes of life of the people, the vegetable and mineral products, the exploitation of the laboring classes, descriptions of the capital and other cities, the hunting and shooting facilities, chapters on education, religion, and civilization, railroads and commerce, and on government and administration. Finally the usual history of the country is taken up. The conquest of Cortez, the Mexican war, the French invasion, the administrations of Porfirio Diaz and Madero, United States intervention, and the present civil war are rehearsed. As a whole, the book gives a good idea of present conditions in Mexico.

SOUTH AMERICA

The Papers of the Stanford Expedition to Brazil in 1911. J. C. Branner, Director. Vol. 1: 499 pp. Ills. Stanford University, Cal., 1914. 10 x 6½.

Under this title twenty papers, published in various scientific periodicals and treating of the geology, ichthyology, entomology and malacology of northeastern Brazil, are combined in one volume. The subject matter is based on explorations and collections made in 1911 by the Stanford University Expedition throughout the coast belt from Para to Pernambuco.

In the first paper, "The Fluting and Pitting of Granites in the Tropics" (*Proc. Amer. Philos. Soc.*, No. 209, Vol. 52), Dr. J. C. Branner presents evi-

dence to show that the formation of grooves and associated caldron-like pits in coarse-grained crystalline rocks of tropical countries can be accounted for by the action of rain. Decomposing organic matter, which collects in the deeper pits, doubtless hastens the process. There is no evidence of glacial action.

"The Estancia Beds of Bahia, Sergipe and Alagoas, Brazil" (*Amer. Journ. of Sci.*, Vol. 35), by the same author, are shown to "cover large areas in the states of Bahia, Sergipe and the southern corner of Alagoas," and to consist of sedimentary beds of marine and freshwater deposits. At certain points the series rests unconformably upon beds of probable Carboniferous age or against the Caboclo shales, presumably Devonian. A fossil fern (*Alethopteris branneri*) from the Estancia series and described by David White (same journal) indicates that the beds are Permian, though the evidence is not wholly conclusive.

The monotonous, low-lying sandy coast, characteristic of nearly the entire northeast coast of Brazil, and typified by the region about Natal, is described by Olaf P. Jenkins in a paper entitled "Geology of the Region about Natal, Rio Grande do Norte, Brazil" (*Proc. Amer. Philos. Soc.*, Vol. 52). In this locality limestones (late Cretaceous or early Tertiary) rest upon probable Archæan crystalline rocks, and in turn are partially covered by unconformable sandstones and clays over which the trade winds pile sand dunes of great extent. Recent coastal subsidence has resulted in the formation of several good harbors, while the dunes, clogging the river mouths, have developed extensive lakes and fertile valleys.

Fishes collected from these lakes, and from tidepools and city markets, form the basis of a paper, "The Fishes of the Stanford Expedition to Brazil" by E. C. Starks (Stanford University Publications, 1913). Two hundred and thirty species are listed, of which 15 are new to science. Of the 13 entomological papers 11 appear in the 19th and 20th volumes of *Psyche*. These are concerned with ants, bees, various families of beetles, and a few neuropterid species. "Brazilian *Ichneumonidæ* and *Brachonidæ*, obtained by the Stanford Expedition" (*Ann. Entom. Soc. of Amer.*, Vol. 5), by C. T. Brues, contains the descriptions of thirty-two new species. "New Species of Lamellicorn Beetles" (*Ann. and Mag. of Nat. Hist.*, Ser. 8, Vol. 9), by G. J. Arrow, records eighteen new species. "Land and Fresh-water Mollusks of the Stanford Expedition to Brazil" (*Proc. Acad. Nat. Sci. Phila.*, Vol. 67), by Dr. Fred Baker, lists 113 species and subspecies, of which 43 are new. In the same journal Harold Heath describes "The Anatomy of Two Brazilian Land Shells, *Anostoma depressum* and *Tomigerus clausus*."

HAROLD HEATH.

Voyage en Colombie (1911-1912). Par Félix Serret. vii and 331 pp. H. Dunod & E. Pinat, Paris, 1912. Fr. 3.50. 7½ x 5.

A French account of a tour through Colombia, made in 1911-12. It is a simple narrative of the traveler's experiences. Starting from Panama, he landed at Buenaventura, the most important Colombian port on the Pacific. From there he went by rail to Cali, and then by river-boats and mule-back journeyed across the country to Cartagena and Santa Marta, where he embarked for his native land. He combats at length the statement of Oviedo, that a certain infectious malady, which each nation is fond of foisting upon the other, came to Europe from America with the sailors of Columbus; and maintains that it dates back to the early Hebrew Kings. He also denies the statement of Oviedo, that the banana was imported into the Western Hemisphere, and contends that it is an indigenous plant. The "English biscuit," served with his coffee, and called "crackers," tastes to him like chips of wood. The book is a pleasant example of the French tourist's style of writing.

Peru: A Land of Contrasts. By Millicent Todd. viii and 314 pp. Ills., index. Little, Brown & Co., Boston, 1914. $2. 8½ x 6.

An account of the geography, geology, ethnology, and religion of Peru by a woman and an artist, whose aim is to divine the true inwardness of the

Peruvian land and people. Within the landscape of desert perspective, she brings an interesting account of the rule and religion of the Incas. The climatology of the Andes, the habits of the vicuña, alpaca, and llama, among the fauna, the megalithic ruins of Tiahuanaco, and the peculiar geographical and climatic characteristics of Lake Titicaca, and its island of the same name, receive due mention. The geographical wonders of the upper Amazon river-basin, the luxuriant vegetation resulting, the natural irrigation of rain and river, the animal life, especially the tapir, the armadillo, the sloth, and the vampire bats, are the more important topics appealing to the artistic sense. The bibliography is a discriminating valuation of the sources from which the work has been derived.

AFRICA

Der Victoria-Njansa. Eine monographische Studie auf Grund der vorhandenen Literatur. Von Dr. Joachim Perthes. vi and 96 pp. Map. Justus Perthes, Gotha, 1914. Mk. 4. 11 x 7½.

The area of Victoria Nyanza is about 26,000 square miles, that of its drainage basin four times as much. It is very shallow, hardly more than 200 feet deep. It appears to be a hollow resulting from the warping of a peneplaned surface at the time of the fracturing that made the Great African Rift. The shores are very irregular, with a total length four times as great as the circumference of the circle of the same area. Five hundred islands lie along the shores. The surface of the lake is 3,700 feet above the sea and Perthes regards it as the main source of the Nile, admitting, however, that Abyssinia sends more water by the Blue Nile than comes from the lakes. The position just south of the equator, where the heat equator lies well to the north, puts the Victoria lake in the belt of the southern trade winds, which blow there all the year. The southeast winds may be said to be prevalent, but their greatest strength is in June and July, when the sun is furthest north. Although shallow, the lake has a sufficient water-mass to cause lake and shore breezes at all seasons all around the shores, but these are superimposed on the system of the trades. At their strongest the southeast trades raise a violent surf, making navigation on the lake dangerous and producing currents, westerly on the south shore and northerly on the west. As a result of the southeast winds, the climate of the northwest shore is oceanic, humid and rainy, with luxuriant vegetation; that of the southeast is continental, with strongly pronounced dry seasons, two each year. The rains of Nyanza are accompanied by terrific thunderstorms, which stand a little inland in the afternoon, when the wind is from the lake, and move out over the lake at night when the wind is reversed.

Such are the main facts. The first section of the book gives a history of the many errors in the maps of the lake which were finally removed by the survey made by Commander Whitehouse in 1901. Whitehouse's map is regarded as highly accurate. With Teutonic "laboriosity" Dr. Perthes bestows as many pages to errors as to truths, but an admirable view of present-day knowledge of the great African lake is presented. There is a good map, but the text would have been much helped by a few sketch maps and pictures.

MARK JEFFERSON.

Missionary Travels in Central Africa. By F. S. Arnot. xix and 159 pp. Maps, ills., index. Alfred Holness, London, 1914. 2s. 8½ x 6.

When Arnot was about four years old, his family removed to the town where Dr. David Livingstone's family resided. Here Arnot learned of Livingstone's work in Africa, and resolved that when he became a man, he would follow the great explorer's example. Accordingly, in 1881, Arnot left England for South Africa; thence to the Upper Zambezi. Then followed years of exploration and hardship. The five maps given in this book show the routes traversed by Arnot. He suffered sickness and narrowly escaped innumerable dangers from wild beasts and equally savage men, but nothing daunted his resolution to open up Central and South Africa to Christianity. Everywhere he went he looked for suitable sites for mission stations, and as he traveled he preached the Gospel and healed the sick. He made friends with the power-

ful native chiefs and they protected and aided him as best they could. His description of the country, its people, and their life, customs, and superstitions have considerable geographical interest.

Arnot died in 1914. He was one of the few pioneer travelers in Africa who made long journeys depending entirely upon the country itself to supply him with food. A brief account of his earlier work and books was printed in the *Bulletin* (1914, p. 775). W. G. BURROUGHS.

Adventures in Africa under the British, Belgian and Portuguese Flags. By J. B. Thornhill. ix and 330 pp. Map, diagrams, index. E. P. Dutton & Co., New York, 1915. $3.50. 9 x 6.

Mr. Thornhill tells of his pioneer life in the Katanga Province of the Belgian Congo which occupies a part of the Congo-Zambezi watershed; and of his own work and the work of others in opening up the mineral deposits and developing the transportation facilities there. He says that bicycles have played an important part in Central Africa where, in a large part of Northern Rhodesia and the southern Congo area, no domestic animal can live because of the tsetse fly. Sleeping sickness is described in detail. Several varieties of the tsetse fly carry this disease, but they are found only on forest-clad shores of the large waterways and not over 200 yards from them. They are not found in high country or far south. Along the Congo-Zambezi watershed there is no danger of sleeping sickness nor is there danger in the copper belt of Katanga, but the districts from which must be drawn much of the labor supply for the copper mines are not safe and the routes from those districts are infected.

The question of the native hut tax and the labor tax is discussed. The hut tax which prevails in British territory is the better method, all things considered. In Portuguese territory the free laborer has been corrupted by Portuguese liquor dealers and this condition of the free laborer is the "only justification for employing slaves," in that region. The author objects strongly to the system of indentured labor carried on by the cacao-planters on the islands of St. Thomas and Principe, for these indentured laborers are in reality slaves for life. On the mainland conditions are even worse than on the islands. A large colored map of the Upper Luapula in Katanga is given.

W. G. BURROUGHS.

Beiträge und Ergänzungen zur Landeskunde des deutschen Namalandes. Von P. Range. 120 pp. Maps, ills. *Abhandl. Hamburg. Kolonialinst.*, Vol. 30, (Reihe C, Vol. 3.) L. Friederichsen & Co., Hamburg, 1914. 11½ x 8.

Dr. Range's purpose, a purpose characteristic of most of the work produced by the Colonial Institute of Hamburg, has been to furnish, in the most concise terms, a practical handbook for the guidance of all who may be concerned with Namaland as administrators and as settlers. The geographical record is drawn with close reference to the natural sculpturing of the surface as produced by underlying geological conditions. Upon this is laid such analytical statement of the climatic conditions as must prove of the utmost value in the economic exploitation of the soil. The same linking of geographical factors is continued through successive chapters setting forth the floral and faunal character of the country and the difference between district and district. Dr. Range avoids the problems which beset the investigator of racial affinities in South Africa. His end is attained by a concise disquisition upon the economic value of the various tribes of Namaland and particularly upon their availability as a source of agricultural and other labor. The work is excellent in form and highly comprehensive in treatment and is sure to take first rank in the geographical literature of South Africa.

WILLIAM CHURCHILL.

The Settler and South Africa. By William MacDonald. 159 pp. Ills. Union Castle Line, London (Amer. Agent, Sanderson and Son, New York), 1914. 6d. 7½ x 5½.

A booklet issued by the Union Castle Line of South African steamships,

in the interest of the business of transporting settlers to South Africa. The gentleman who compiles the pamphlet knows his South Africa thoroughly, and strives to create no illusions for the prospective settler, but puts before him plainly and clearly the actual conditions of settlement in South Africa, calculates for him the pounds, shillings, and pence of the proposition, and makes real just what he has to expect, if he leaves the homeland and becomes a South African settler.

ASIA

A Handbook for Travellers in India, Burma and Ceylon. 9th edit. clxvii and 664 pp. Maps, index. John Murray, London, 1913. Charles Scribner's Sons, New York. 20s. 7 x 5.

The ninth edition of this guide-book is a remarkably complete, sympathetic and up-to-date key to most that is of interest in that fascinating oriental empire. Nineteen pages are given to "general hints," 19 to the voyage from England to India, 113 to information about the religion, history, architecture, art, government, commerce, etc., of India, 556 to routes and places in India, 41 to Burma, 34 to Ceylon, and 22 to advertisements. The last allotment seems out of place in an already bulky guide-book.

The book is written especially for the British traveler. The style is so vivid and appreciative in description that only the scheduled tourist can resist many of the suggested tours. Friendly access to government officials and others has enabled the editor to make his traveling directions so explicit that difficulties are largely forestalled. Only rarely are there exceptions, such as directing that the Godavari Gorge "should certainly be seen." The reviewer was able to reach this gorge recently only by special government coöperation. The tourist would find it practically impossible to see it.

It seems inconsistent to expect the traveler to interpret the excellent geological, isothermal, and rainfall maps, and yet not credit him with the need of good topographical maps. Only a few of the 79 maps show relief and these but poorly. It seems absurd to omit relief in maps of such rugged regions as Darjeeling, Simla, and Sikkim. It is also confusing to have the map oriented by an inconspicuous arrow rather than follow the rule of having north toward the top of the page.

This work is so advanced that it prompts one to suggest another step forward. No country has so many varieties of people as India that respond so interestingly to their environment. Surely the traveler would find the interpretation of the character of these people fully as appealing as their architecture, religion, or history. Material, too, is available for this treatment, such as Lawrence's interpretation of the Kashmiris; O'Malley's, of the Oriyas; and Scott's, of the Burmese. SUMNER W. CUSHING.

In the Lands of the Sun. Notes and Memories of a Tour in the East. By H. R. H. Prince William of Sweden. xii and 344 pp. Ills., index. E. Nash, London, 1915. 16s. 9 x 6.

Prince William journeyed to Siam in 1912 as the representative of Sweden at the coronation of the King. He extended his trip to include a visit to Cambodia, Burma, India and Ceylon, and this book contains his observations of customs and conditions in these lands. Apart from the writer's viewpoint there is little that is new in the book. The Prince has, however, an interesting style, and seeing Siam and India through his eyes is far from being an arduous task. ROBERT M. BROWN.

The Japanese Empire and Its Economic Conditions. By Joseph d'Autremer. Translated from the French. 319 pp. Map, ills., index. Charles Scribner's Sons, New York, 1914(?). $1.50. 8 x 5½.

Two excellent books on Japan have been recently noticed in these pages, one by a native Japanese, the other by one of our distinguished publicists. The present work, an English translation from the French of the Professor of Oriental Languages at Paris, measures well up to the books just men-

tioned. What especially characterizes it is a wealth of statistics bearing on the economic resources, the commercial output, and the governmental provisions of Japan. The importance of the geographical factor is fully recognized, but the contention is that it is not the only factor, for the reason that the racial elements of the British Isles, Celtic, Gallic and Anglo-Saxon have not been unified. It is claimed that Japan is aiming to be the paramount world power of the Pacific, but that there is no danger of a commercial Yellow Peril, and that Korea has everything to gain by remaining under Japanese control, while the commercial possibilities of France in Japan are said to be well-nigh negligible.

OTHER BOOKS RECEIVED

These notes do not preclude more extended reference later

NORTH AMERICA

BIBLIOGRAPHY OF ARIZONA. Being the record of literature collected by Joseph Amasa Munk, M.D., and donated by him to the Southwest Museum of Los Angeles, Cal. By Hector Alliot. (Series: The Munk Library of Arizoniana.) 431 pp. Ills., index. The Southwest Museum, Los Angeles, Cal., 1914. $3.50. 9½ x 6. [Valuable list of 7,900 items divided into two parts, an author and a subject catalogue. Range very wide, including even publications emanating from Arizona, such as Percival Lowell's writings on Mars.]

—— REPORT OF THE [NEW YORK] STATE COMMISSIONER OF HIGHWAYS FOR 1914. 892 pp. Albany, 1915. 9 x 6.

THE RAILWAY LIBRARY, 1914. (6th Series.) A collection of addresses and papers on railway subjects, mostly delivered or published during the year named; also statistics for 1914. Compiled and edited by Slason Thompson. 470 pp. Ills., index. Bureau of Railway News and Statistics, Chicago, 1915. $1. 8½ x 5½.

SOUTH AMERICA

VIAGEM PELO INTERIOR DA REPUBLICA ARGENTINA. Trabalho apresentado á Secção de Sciencias Physicas e Naturaes do Terceiro Congresso Scientifico Latino Americano. (Celebrado na Cidade do Rio de Janeiro de 6 a 16 de Agosto de 1905.) Pelo Dr. Simoens da Silva. 307 pp. Ills. Imprensa Nacional, Rio de Janeiro, 1910. 9½ x 6½.

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AFRICA

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NEW MAPS

EDITED BY THE ASSISTANT EDITOR

For system of listing maps see p. 75 of this volume

MAPS ISSUED BY UNITED STATES GOVERNMENT BUREAUS

U. S. GEOLOGICAL SURVEY

Topographic Sheets

(Including Combined and Special Topographic Maps)

California. Salida Quadrangle. Surveyed in 1913. 1:31,680. 37°45′0″ - 37°37′30″ N.; 121°7′30″ - 121°0′0″ W. Contour interval 5 ft. Edition of August, 1915.

[Belongs to the two-inches-to-the-mile series covering the northern and central sections of the Great Valley of California.]

Nebraska. Falls City Quad. Surveyed in 1912-1913. 1:62,500. 40°15′ - 40°0′ N.; 95°45′ - 95°30′ W. Interval 20 ft. Edit. of July 1915.

Utah. Wellington Quad. Surveyed in 1912-1914. 1:62,500. 39°45′ - 39°30′ N.; 110°45′ - 110°30′ N. Interval 50 ft. Edit. of Aug. 1915.

[Contains the scarp face of the western end of the Roan, or Book, Cliffs, continuing to the west the area shown on the Sunnyside sheet listed under "Utah" in the May *Bulletin* (Vol. 47, 1915, p. 396). The area of both sheets is included in the Price River reconnaissance sheet, 1:250,000, published in 1886.]

West Virginia. Hacker Valley Quad. Surveyed in 1913. 1:62,500. 38°45′ - 38°30′ N.; 80°30′ - 80°15′ W. Interval 50 ft. Edit. of July 1915.

[Coextensive with the southwestern quarter of the old Buckhannon sheet, 1:125,000, published in 1896.]

NORTH AMERICA

UNITED STATES

Michigan. Mackinac Island, Michigan, 1915. Mapped by Morgan H. Wright, E. M., Marquette, Mich. [1:7,500.] [45°50′ N. and 84°38′ W.] Oriented N. 35° E. Accompanies "Historic Mackinac" by E. O. Wood, 1915.

[Detailed map showing all points of historical interest. Care has been exercised in preserving the original names; the names used have been approved by the Michigan Historical Commission.]

AFRICA

Africa. État actuel des chemins de fer africains. Par le Gouverneur E. Salesses, Ancien Directeur du Chemin de fer de Konakry au Niger. [1:40,000,000.] [42° N.-35° S.; 20° W.-60° E.] Accompanies, as Fig. 27 on pp. 266 and 267, "Les chemins de fer africains dans leur état actuel" (first part) by M. Salesses, *La Géogr.*, Vol. 29, 1914, No. 4, pp. 248-272.

Portuguese West Africa. Itinéraires suivis par la Mission Rohan-Chabot dans l'Angola et la Rhodesia (1912-1914), dressé par le Capitaine Grimaud. 1:7,500,000. 12°-19° S.; 11°-26° E. Accompanies, on p. 235, "Exploration dans l'Angola et la Rhodesia, (1912-1914)" by P. de Rohan-Chabot, *La Géogr.*, Vol. 29, 1914, No. 4, pp. 233-239.

[Shows area covered by and routes followed on reconnaissance surveys, distinguishing three grades according to the instruments used.]

Other Maps Received

NORTH AMERICA

CANADA

Canada. Map of the Dominion of Canada. 1:12,672,000. Railway Lands Branch, Dept. of Interior, [Ottawa], 1914.

Maritime Provinces. Map showing the number of chartered banks in New Brunswick, Nova Scotia and Prince Edward Island. 1:1,584,000. Railway Lands Branch, Dept. of Interior, [Ottawa], 1914.

Ontario-Quebec. Map showing branches of chartered banks in Ontario and Quebec. 1:1,584,000. Railway Lands Branch, Dept. of Interior, Ottawa, 1915.

Quebec. Map of New Quebec Territory (formerly district of Ungava), Province of Quebec. Geologically coloured from explorations by A. P. Low and Robert Bell. 1:2,217,600. Accompanies "Extracts from Reports on the District of Ungava . . . under the name of the Territory of New Quebec," Department of Colonization, Mines and Fisheries, Mines Branch, Quebec, 1915.

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Map of Manitoba, Saskatchewan and Alberta, showing the number of quarter sections available for homestead entry in each township, also the pre-emption and purchased homestead area as defined by the Dominion Lands Act, 1908. 1:2,217,600. Railway Lands Branch, Department of Interior, [Ottawa], 1915.

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UNITED STATES

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